

231	522	67.2	237	22	AAE04523	Human single chain	304	228	29.3	129	20	AAW99505	Glycoprotein hormo
232	519	66.8	117	11	AAE04523	HCG analogue-bc' b	305	228	29.3	129	20	AAW99502	Glycoprotein hormo
233	517	66.5	234	16	AAE04523	Single chain gonad	306	228	29.3	129	20	AAW99496	Glycoprotein hormo
234	515	66.3	145	14	AAE04523	HCG/beta subunit	307	228	29.3	129	20	AAE04518	Beta subunit of a
235	514	66.2	134	14	AAE04523	Modified hCG beta	308	227	29.2	111	21	AAE04515	Human follicle sti
236	514	66.2	237	16	AAE04512	Human single chain	309	227	29.2	129	20	AAW99500	Glycoprotein hormo
237	513	66.0	237	16	AAE04512	Single chain gonad	310	227	29.2	129	20	AAW99503	Glycoprotein hormo
238	509	65.5	98	19	AAW47494	Human beta-hCG pro	311	226	29.1	109	21	AAW92002	Human follicle sti
239	509	65.5	98	19	AAW50089	Human chorionic go	312	226	29.1	132	20	AAW99500	hTSH-beta analog
240	509	65.5	98	19	AAW50054	Human chorionic go	313	225	29.0	132	20	AAW99504	hTSH-beta analog
241	507	65.3	93	22	AAU04621	Human chorionic go	314	224	28.8	45	8	AAW99504	Sequence of the C-
242	507	65.3	93	22	AAU04493	Human chorionic go	315	224	28.8	46	3	AAW99504	HCG analogue. Hom
243	505	65.0	237	16	AAE04523	Partially deglycos	316	224	28.8	112	14	AAW99504	Human thyroid stim
244	505	64.1	117	11	AAE04523	Human single chain	317	224	28.8	129	20	AAW99497	Glycoprotein hormo
245	498	64.1	117	11	AAE04523	Modified hCG beta	318	222	28.6	129	20	AAW99499	Glycoprotein hormo
246	498	64.1	117	11	AAE04523	HCG/hTSH chimera	319	222	28.6	223	22	AAW99499	Human single chain
247	496.5	63.9	123	12	AAE04523	Single chain gonad	320	222	28.6	223	22	AAW99499	Human single chain
248	492	63.3	237	16	AAE04523	Human chorionic go	321	222	28.6	223	22	AAE04482	Partially deglycos
249	488	62.8	88	22	AAE04523	Human CG beta subu	322	222	28.6	226	16	AAE04516	Single chain gonad
250	468	60.2	151	20	AAW43276	Equine chorionic g	323	222	28.6	226	16	AAE04516	Human single chain
251	457.5	58.9	149	14	AAW43276	Human beta-hCG pro	324	222	28.6	46	16	AAE04278	hTSH-beta analog
252	457	58.8	88	19	AAW47495	Human chorionic go	325	221	28.4	111	22	AAE04278	Human FSH-beta sub
253	457	58.8	88	19	AAW50050	Human chorionic go	326	221	28.4	111	22	AAE04278	Human FSH-beta sub
254	448	59.7	149	14	AAW50052	Human chorionic go	327	220	28.3	111	22	AAE04278	Human FSH-beta sub
255	448	59.7	149	14	AAW50052	Human chorionic go	328	219	28.2	111	22	AAE04278	Human FSH-beta sub
256	447.5	57.6	169	19	AAW51110	Equine chorionic g	329	218	28.1	129	20	AAE04278	Human FSH-beta sub
257	447.5	57.6	169	19	AAW51110	Equine chorionic g	330	218	28.1	129	20	AAE04278	Human FSH-beta sub
258	447.5	57.6	169	19	AAW51110	Equine chorionic g	331	218	28.1	129	20	AAE04278	Human FSH-beta sub
259	447.5	57.6	169	19	AAW51110	Equine chorionic g	332	218	28.1	129	20	AAE04278	Human FSH-beta sub
260	447.5	57.6	169	19	AAW51110	Equine chorionic g	333	217	27.9	111	22	AAE04278	Human FSH-beta sub
261	447.5	57.6	169	19	AAW51110	Equine chorionic g	334	217	27.9	111	22	AAE04278	Human FSH-beta sub
262	439	56.5	139	12	AAE04511	Bovine lutropin be	335	217	27.9	111	22	AAE04278	Human FSH-beta sub
263	439	56.5	141	22	AAE04511	hCG/hFSH chimera	336	217	27.9	111	22	AAE04278	Human FSH-beta sub
264	436	56.1	115	12	AAE04511	hCG/hFSH chimera	337	217	27.9	111	22	AAE04278	Human FSH-beta sub
265	436	56.1	115	12	AAE04511	hCG/hFSH chimera	338	217	27.9	111	22	AAE04278	Human FSH-beta sub
266	436	56.1	115	12	AAE04511	hCG/hFSH chimera	339	217	27.9	111	22	AAE04278	Human FSH-beta sub
267	433.5	55.8	85	20	AAE04511	hCG/hFSH chimera	340	217	27.9	111	22	AAE04278	Human FSH-beta sub
268	429.5	55.3	139	12	AAE04511	hCG/hFSH chimera	341	217	27.9	111	22	AAE04278	Human FSH-beta sub
269	429	55.2	141	22	AAE04511	hCG/hFSH chimera	342	217	27.9	111	22	AAE04278	Human FSH-beta sub
270	425	54.7	141	22	AAE04511	hCG/hFSH chimera	343	217	27.9	111	22	AAE04278	Human FSH-beta sub
271	422	54.3	138	22	AAE04511	hCG/hFSH chimera	344	217	27.9	111	22	AAE04278	Human FSH-beta sub
272	420.5	54.1	137	19	AAE04511	hCG/hFSH chimera	345	216	27.8	111	22	AAE04278	Human FSH-beta sub
273	420	54.1	131	19	AAE04511	hCG/hFSH chimera	346	216	27.8	111	22	AAE04278	Human FSH-beta sub
274	420	54.1	134	19	AAE04511	hCG/hFSH chimera	347	216	27.8	111	22	AAE04278	Human FSH-beta sub
275	415	53.4	139	7	AAE04511	hCG/hFSH chimera	348	216	27.8	111	22	AAE04278	Human FSH-beta sub
276	415	53.4	139	7	AAE04511	hCG/hFSH chimera	349	216	27.8	111	22	AAE04278	Human FSH-beta sub
277	415	53.4	139	7	AAE04511	hCG/hFSH chimera	350	216	27.8	111	22	AAE04278	Human FSH-beta sub
278	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
279	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
280	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
281	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
282	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
283	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
284	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
285	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
286	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
287	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
288	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
289	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
290	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
291	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
292	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
293	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
294	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
295	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
296	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
297	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
298	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
299	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
300	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
301	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
302	415	53.4	139	7	AAE04511	hCG/hFSH chimera							
303	415	53.4	139	7	AAE04511	hCG/hFSH chimera							

ALIGNMENTS

RESULT 1	
AAW92000	
ID	AAW92000 standard; Protein; 140 AA.
XX	AAW92000
AC	AAW92000
XX	19-JUL-2000 (first entry)
DT	Human chorionic gonadotropin.
DD	human chorionic gonadotropin.
XX	human chorionic gonadotropin; beta subunit; CKGP; mutant;
KW	cystine knot growth factor; hairpin loop; thyroid stimulating hormone;
KW	TSH; hypothyroidism; thyroid cancer.
OS	Homo sapiens.
XX	
XX	Key Location/Qualifiers
PH	Disulfide-bond 9..57
FT	Domain 8..33
FT	/label= beta_hairpin_loop_1
FT	Misc-difference 1..37

DT	11-JUN-1999	{first entry}
XX		
XX	Human hCG beta-subunit peptide structure I.	
DE		
XX		
XX	Human chorionic gonadotropin; beta subunit; antigenic peptide; hCG;	
KW	contraceptive; vaccine; fertility; polyclonal antisera; diagnostic;	
KW	immunogen; human luteinizing hormone.	
KW		
XX		
OS	Homo sapiens.	
XX		
XX	US5691992-A.	
PR		
XX		
PD	06-APR-1999.	
XX		
XX	06-JUN-1995; 9505-0467569.	
XX		
XX	07-AUG-1989; 8905-0300570.	
PR		
XX	04-AUG-1985; 8505-0804620.	
XX		
PR	17-AUG-1987; 8705-0086401.	
XX		
PR	06-OCT-1992; 9205-0958601.	
XX		
PR	06-JUN-1995; 9505-0467569.	
XX		
PA	(OHIS) UNIV OHIO STATE RES FOUND.	
XX		
PI	Stevens VC;	
XX		
PI		
XX		
DR	MP1; 1999-253928/21.	
XX		
PT	Synthetic antigenic peptides from human chorionic gonadotropin	
XX		
PT	beta-subunit	
XX		
XX		
XX	Disclosure; Column 19; 80pp; English.	
XX		
CC	This invention describes novel synthetic antigenic peptides (A) based	
CC	on the human chorionic gonadotropin (hCG) beta-subunit. These peptides	
CC	have contraceptive properties and are used for the development of	
CC	vaccines used to control fertility in animals and to generate	
CC	polyclonal antisera for diagnostic use. The peptides are more specific	
CC	immunogens than the corresponding hCG beta-subunit.	
CC	They do not elicit antibodies that cross-react with human	
CC	luteinizing hormone.	
CC		

QY	2	SKELPRPCRP	INATLAVEKGGCPVCITNTTTCACGCTPMTNRVLQGVLPALPQVCYNR	61
Db	1	SKELPRPCRP	INATLAVEKGGCPVCITNTTTCACGCTPMTNRVLQGVLPALPQVCYNR	60
QY	62	DYAFESTRLGCG	PGVNVSTYAVALSQCALCRRTTDCGGKDPHLCDDPFDQSSS	121
Db	61	DYAFESTRLGCG	PGVNVSTYAVALSQCALCRRTTDCGGKDPHLCDDPFDQSSS	120
QY	122	SKAPPPSLPSG	SLRPGSPDST	141
Db	121	SKAPPPSLPS	SLRPGSPDST	140

XX	24-MAR-1999 (first entry)	Human chorionic gonadotrophin (hCG) beta subunit.
DT		
XX		
DE		Human; chorionic gonadotropin; hCG; three-dimensi
XX		
KW		

Human; chorionic gonadotropin; hCG; three-dimensional; 3D; analogue;
KW
molecular stimulation; visual display; chemical structure; growth factor;
KW

Fri Oct 11 17:02:50 2002

spector-09-813398.pep

Page 1

```

: Entered [jdelaval 11-Oct-02 6:53]
09-813398-3A
PSKEPLRCPRIINATCAVEKEGQCVITNTTCAGCPTTRVLOGVLPALPOVNVNRRVFESIRL
PGPCGXNPVYSVALSCQCALRKSTTDCGPKDHPUTCDDPRFDSSSSKAPSLSPSLPGPSD
T1

```

```
; Entered {JdelaVal 11-Oct-02 6:53}  
09-81398-3B  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXCTMRVGLPALPOWXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXISQCALCRSTTCGGPRDHLPTCDRPFQDSKSNAPPSPSLPRLGPSD  
T1
```


GenCore version 5.1.3
Copyright (c) 1993 - 2002 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: October 11, 2002, 10:56:18 : Search time 25 seconds
(without alignments)
218.378 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 777

Sequence: 1 PSKEPLRPRCRPNATLAVE.....SKAPPPSLPSRLPQPDPT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Hit 100%

Listing first 50 summaries

Database : SwissProt_40.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	99.1	165	1 CCHB_HUMAN	P01233 homo sapien
2	629	81.0	165	1 CCHB_PAPAN	P07434 papio anubi
3	544	70.0	141	1 LSHB_HUMAN	P01229 homo sapien
4	499.5	64.3	164	1 CCHB_CALJA	P51500 callithrix
5	476.5	61.3	169	1 LSHB_EQUUS	O46641 equus burch
6	463	59.6	169	1 LSHB_EQUUS	P19794 equus asinu
7	448	57.7	143	1 LSHB_FELCA	O77805 felis silve
8	443.9	56.5	169	1 LSHB_HORSE	P06721 equus cabal
9	436	56.1	141	1 LSHB_BOVIN	P01230 bovin tauru
10	436	56.1	141	1 LSHB_BAT	P01230 bovin tauru
11	430	55.3	141	1 LSHB_CERSI	O77835 ceratotheri
12	429	55.2	141	1 LSHB_PIG	P01232 sus scrofa
13	429	55.2	141	1 LSHB_SHEEP	P01231 ovis aries
14	425	54.7	141	1 LSHB_MOUSE	O09108 mus musculu
15	422	54.3	138	1 LSHB_CANFA	P18842 canis famil
16	409	52.6	128	1 LSHB_PHOSU	Q9yq49 phodopus su
17	407	52.4	118	1 LSHB-BALAC	P33088 balaeonopt
18	406	52.3	118	1 LSHB-PHYCA	P25330 physeter ca
19	402	51.7	138	1 LSHB-MACRU	O46483 macropus ru
20	402	51.7	138	1 LSHB-TRIVU	O46483 macropus ru
21	402	51.7	138	1 LSHB-TRIVU	O46483 macropus ru
22	303	39.0	141	1 LSHB-TRIVU	O46483 macropus ru
23	301	38.7	141	1 LSHB-TRIVU	O46483 macropus ru
24	301	38.7	141	1 LSHB-TRIVU	O46483 macropus ru
25	292	37.6	142	1 LSHB-TRIVU	O46483 macropus ru
26	289	37.2	138	1 LSHB-TRIVU	O46483 macropus ru
27	289	37.2	142	1 LSHB-TRIVU	O46483 macropus ru
28	282	36.3	149	1 LSHB-TRIVU	O46483 macropus ru
29	279	35.9	142	1 LSHB-TRIVU	O46483 macropus ru
30	276.5	35.6	113	1 LSHB-TRIVU	O46483 macropus ru
31	274	35.3	142	1 LSHB-TRIVU	O46483 macropus ru
32	273	35.1	140	1 LSHB-TRIVU	O46483 macropus ru
33	269	34.6	128	1 LSHB-TRIVU	O46483 macropus ru

34	265	34.1	112	1 LSHB-RANCA	P80071 rana catesb
35	259.5	33.4	137	1 LSHB-RANCA	O90225 acanthopagr
36	258	33.2	156	1 LSHB-COTJA	P43637 coturnix co
37	255	32.8	139	1 LSHB-MORSA	O91121 morone saxa
38	255	32.8	139	1 LSHB-MORSA	O91121 morone saxa
39	255	32.8	139	1 LSHB-MORSA	O91121 morone saxa
40	254	32.7	138	1 LSHB-MORSA	O91121 morone saxa
41	253	32.6	127	1 LSHB-MORSA	O91121 morone saxa
42	252	32.4	115	1 LSHB-MORSA	O91121 morone saxa
43	243	31.3	138	1 LSHB-MORSA	O91121 morone saxa
44	243	31.3	138	1 LSHB-MORSA	O91121 morone saxa
45	242	31.1	138	1 LSHB-MORSA	O91121 morone saxa
46	241	30.9	138	1 LSHB-MORSA	O91121 morone saxa
47	240	30.9	138	1 LSHB-MORSA	O91121 morone saxa
48	239	30.8	138	1 LSHB-MORSA	O91121 morone saxa
49	239	30.8	138	1 LSHB-MORSA	O91121 morone saxa
50	234	30.1	130	1 LSHB-MORSA	O91121 morone saxa

ALIGNMENTS

RESULT 1	
CGHB_HUMAN	STANDARD; PRT; 165 AA.
AC	P01233: Q14000, Q13991;
NC	P01233: Q14000, Q13991;
DT	21-JUL-1988 (Rel. 01, Last sequence update)
DT	16-OCT-2001 (Rel. 40, Last annotation update)
DE	Choriongonadotropin beta chain precursor (Chorionic gonadotropin beta subunit) (CG-beta).
GN	CGB.
OS	Homo sapiens (Human).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.
OX	NCBI_Taxid=9606;
RA	Fiddes J.C., Goodman H.M.;
RP	SEQUENCE FROM N.A.
RX	MEDLINE=81012134; PubMed=6774259;
RT	"The cDNA for the beta-subunit of human chorionic gonadotropin suggests evolution of a gene by readthrough into the 3'-untranslated region."
RL	Nature 286:684-687(1980).
RN	[2]
RP	SEQUENCE FROM N.A.
RX	MEDLINE=84093590; PubMed=6690982;
RA	Talmadge K., Panakopoulos N.C., Fiddes J.C.; of human chorionic gonadotropin and the genes for the beta subunits of human chorionic gonadotropin and human chorionic gonadotropin."
RL	Nature 307:37-40(1984).
RN	[3]
RP	SEQUENCE FROM N.A.
RX	MEDLINE=84008141; PubMed=6194155;
RA	Pollicastro P., Ovitt C.E., Hoshina M., Boothby M.R., Boime I.;
RT	"The beta subunit of human chorionic gonadotropin is encoded by multiple genes."
RL	J. Biol. Chem. 258:11492-11499(1983).
RN	[4]
RP	SEQUENCE OF 1-20.
RX	MEDLINE=81117268; PubMed=7462224;
RA	Birken S., Fetherston J., Canfield R.E., Boime I.;
RT	"The amino acid sequences of the prepeptides contained in the alpha and beta subunits of human chorionic gonadotropin."
RL	J. Biol. Chem. 256:1816-1823(1981).
RN	[5]
RP	SEQUENCE OF 21-165.
RX	MEDLINE=75211304; PubMed=1150658;
RA	Morgan F.J., Birken S., Canfield R.E.;
RT	"The amino acid sequence of human chorionic gonadotropin. The alpha subunit and beta subunit."
RL	J. Biol. Chem. 250:5247-5258(1975).

DR	EMBL:	K0181;	AAA3287.1; .
DR	EMBL:	K0092;	AAA3287.1; JOINED.
DR	EMBL:	K0182;	AAA3287.1; JOINED.
DR	EMBL:	A0067;	AD0067.1; JOINED.
DR	PDB:	HCRN:	10-SEP-94.
DR	PDB:	IHRP:	01-NOV-94.
DR	PDB:	IXUL:	15-MAY-97.
DR	GlycoSuiteDB:	PQ1233;	-.
DR	MIM:	118860;	-.
DR	InterPro:	IPR000359;	Cys_knot.
DR	InterPro:	IPR002400;	Gr_Cysknot.
DR	InterPro:	IPR001345;	Glyco_hormone_beta.
DR	SMART:	SM00068;	Glycosylase_A.
DR	PRINTS:	PR00418;	GECKSKNOT.
DR	SMART:	SM00068;	GHB: 1.
DR	PROSITE:	PS00261;	GLYCO_HORMONE_BETA_1; 1.
DR	PROSITE:	PS00689;	GLYCO_HORMONE_BETA_2; 1.
DR	KW	Hormone;	Glycoprotein; Signal; Pharmaceutical; 3D-structure.
FT	SIGNAL	1	20
FT	CHAIN	21	165
FT	DISULFID	43	97
FT	DISULFID	46	130
FT	DISULFID	54	108
FT	DISULFID	58	110
FT	DISULFID	113	120
FT	CARBOHYD	33	33
FT	CARBOHYD	50	50
FT	CARBOHYD	141	141
FT	CARBOHYD	147	147
FT	CARBOHYD	152	152
FT	CARBOHYD	158	158
FT	VARIANT	137	137
FT	CONFLICT	24	24
FT	SEQUENCE	165 AA;	17739 MW; 5598FB95A105748 CRC64;
<hr/>			
Query Match			
E-value Similarity 100.0% Price No			
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;			
<hr/>			
QY	2	SKEPLRPICRPINATLAVKECPCVCITVTNTICAGCTPTMTRVLYGVLPALPOVVCNTR	61
Db	21	SKEPLRPICRPINATLAVKECPCVCITVTNTICAGCTPTMTRVLYGVLPALPOVVCNTR	80
QY	62	DYVESIRLPGCPGWPVWYVAVALSCACLCRETTTCGGPKHNPITCDPREDDSS	121
Db	81	DYVESIRLPGCPGWPVWYVAVALSCACLCRETTTCGGPKHNPITCDPREDDSS	140
QY	122	SKAPPPSLSPSLRGESDT	141
Db	141	SKAPPPSLSPSLRGESDT	160
<hr/>			
RESULT 2			
ACBBL_PAPAN			
LT	CHBR	STANDARD;	PRT: 165 AA.
AC	P07414;		
DT	01-APR-1988	(Rel. 07, Created)	
DT	01-APR-1988	(Rel. 07, Last sequence update)	
DT	16-OCT-2001	(Rel. 40, Last annotation update)	
DE	Choriongonadotropin beta chain precursor (Chorionic gonadotrophin beta subunit) (CG-beta).		
DN	CCB.		
OS	Papio anubis (Olive baboon).		
OC	Eukaryota; Metazoa; Chordata;		
OC	Mammalia; Primates; Catarrhini; Cercopitheciidae;		
OC	Cercopitheciinae; Pepsio.		
NCBI_TextId:	g255;		
[1]			
RN	SEQUENCE FROM N.A.		

RX MEDLINE-87106851; PubMed-2433190;
 RA Crawford R.J., Tregear G.W., Niall H.D.;
 RT "The nucleotide sequences of baboon chorionic gonadotropin
 RL beta-subunit genes have diverged from the human.*;
 CC Gene 46161-169(1986).
 CC
 CC -1- FUNCTION: STIMULATES THE OVARIES TO SYNTHESIZE THE STEROIDS THAT
 CC ARE NECESSARY FOR THE MAINTENANCE OF PREGNANCY.
 CC -1- SUBUNIT: MEMBER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
 CC CHAIN WHICH CONFERES BIOLOGICAL SPECIFICITY TO THYROTROPIN.
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
 CC -1- TISSUE SPECIFICITY: PLACENTA.
 CC -1- MISCELLANEOUS: THERE ARE AT LEAST FIVE COPIES OF CG-RELATED GENES
 CC AND AT LEAST TWO OF THESE ARE EXPRESSED IN THE BABOON PLACENTA.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
 CC FAMILY.
 CC
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Molecular Biology Laboratory. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is included in its distribution. For all other
 CC entities requires a license agreement (see <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL; M14966; AAA35383.1;
 CC PIR; A35808; KTBA8.
 CC HSP; P01233; IXUL.
 CC InterPro; IPR000359; GY_knot.
 CC InterPro; IPR001549; GY_knot.
 CC Pfam; PF00007; GY_knot.
 CC PRINTS; SM00068; GHB; 1.
 CC SMART; SM00068; GHB; 1.
 CC PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
 CC PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
 CC Hormone; Glycoprotein; Signal.
 CC SIGNAL 1 20 BY SIMILARITY.
 CC CHAIN 21 165 CHORIOGONADOTROPIN BETA CHAIN.
 CC DISULFID 29 77 BY SIMILARITY.
 CC DISULFID 42 132 BY SIMILARITY.
 CC DISULFID 54 108 BY SIMILARITY.
 CC DISULFID 58 110 BY SIMILARITY.
 CC DISULFID 113 120 BY SIMILARITY.
 CC CARBOHYD 33 33 N-LINKED (GLCNAC...) (BY SIMILARITY).
 CC CARBOHYD 50 50 N-LINKED (GLCNAC...) (BY SIMILARITY).
 CC CARBOHYD 141 141 O-LINKED (BY SIMILARITY).
 CC CARBOHYD 147 147 O-LINKED (BY SIMILARITY).
 CC CARBOHYD 152 152 O-LINKED (BY SIMILARITY).
 CC SEQUENCE 165 AA; 17592 MW; 3603E207A9F1E1C3 CRC64;
 CC
 CC Query Match 81.0%; Score 629; DB 1; Length 165;
 CC Identical Similarity 81.4%; Pred. No. 4,3e-51;
 CC Matches 114; Conservative 9; Mismatches 17; Indels 0; Gaps 0;
 CC
 CC QY 2 SKEPLRPRCPINATLAVEKCGCVITVNTTCAGTCVTRVTCGVLPALPQVYCNHR 61
 CC Db 21 SREPLRLCRPINATLAAEKEACPCVVTNTTCAGTCPTMKRVLQALVLPVQVYCNHR 80
 CC QY 62 DVRFESIRLPCGPGVNVVYVAVLSCGNCALCRSTTDCGPKDPLTCDPRPDSS 121
 CC Db 81 EYRFESIRLPCGPGVNVVYVAVLSCGNCALCRSTTDCGPKDPLTCDPRPDSS 121
 CC QY 122 SNAPPSPSPSLRPGSDT 141
 CC Db 141 SKDPPSPSPSLRPGSDT 160
 CC
 CC RESULT 3
 CC LSHB_HUMAN
 CC ID LSHB_HUMAN STANDARD; PRT; 141 AA.
 CC AC P01239;
 CC DT 21-JUL-1986 (Rel. 01, Created)

DT 01-NOV-1995 (Rel. 32, Last sequence update)
 DE 16-OCT-2001 (Rel. 30, Last annotation update)
 DE Luteinizing hormone beta subunit (LH-beta) (LH-B).
 DE beta) (LH-B) (LH-B).
 GN LHB.
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 ON NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE-84093590; PubMed-6690982;
 RA "Exonuclease R., Panakopoulos N.C., Fiddes J.C.;
 RT gonadotropin and luteinizing hormone.*;
 RL Nature 307:37-40(1984).
 RN [2]
 RP SEQUENCE OF 21-141.
 RX MEDLINE-76062547; PubMed-1191677;
 RA Saitam M.R., Li C.H.;
 RT "Human pituitary lutropin. Isolation, properties, and the complete
 RL amino acid sequence of the beta-subunit.*;
 RX Biochem. Biophys. Acta 412:70-81(1975).
 RP PRELIMINARY SEQUENCE OF 21-141.
 RX MEDLINE-73090987; PubMed-4685398;
 RA Shone B., Parlow A.P.;
 RT "The primary structure of the hormone-specific, beta subunit of human
 RL pituitary luteinizing hormone (hLH).";
 RX J. Clin. Endocrinol. Metab. 36:618-621(1973).
 RP [4]
 RP PRELIMINARY PARTIAL SEQUENCE.
 RX MEDLINE-7321227; PubMed-4719207;
 RA "Gosses J., Hennen G., Lequin R.M.;
 RT "Human luteinizing hormone. The amino acid sequence of the
 RL subunit.*";
 RX FEBS Lett. 29:97-100(1973).
 RN [5]
 RP STRUCTURE OF CARBOHYDRATE.
 RX MEDLINE-91122088; PubMed-1991473;
 RA Melissahar G., Hiyama J., Renwick A.G.C., Nimitz M.;
 RT "NMR investigations of the N-linked oligosaccharides at individual
 RL glycosylation sites of human lutropin.*";
 RX Eur. J. Biochem. 195:257-268(1991).
 RN [6]
 RP STRUCTURE BY NMR OF 58-77.
 RX MEDLINE-92357029; PubMed-1495492;
 RA "Structure of a beta-subunit fragment from human luteinizing
 RT hormone beta-subunit determined by [1H]- and [13N]nuclear magnetic
 RL resonance spectroscopy.*";
 RX Mol. Endocrinol. 6:904-913(1992).
 RN [7]
 RP VARIANT ARG-74.
 RX MEDLINE-92085985; PubMed-1727547;
 RA Meliss J., Axelrod L., Whitcomb R.M., Harris P.E., Crowley W.F.,
 RN Jameson J.L.;
 RT "Hypogonadism caused by a single amino acid substitution in the beta
 RL subunit of luteinizing hormone.*";
 RX J. Clin. Endocrinol. 76:179-183(1992).
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
 CC -1- SUBUNIT: MEMBER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
 CC CHAIN WHICH CONFERES BIOLOGICAL SPECIFICITY TO THYROTROPIN,
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
 CC -1- TISSUE SPECIFICITY: PITUITARY.
 CC -1- DISEASE: DEFECTS IN LHB ARE A CAUSE OF HYPOGONADISM WHICH IS
 CC CHARACTERIZED BY INFERTILITY AND PSEUDOHYPADRODITISM.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
 CC FAMILY.
 CC
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -

the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@sib-sib.ch).

EMBL: Y00264; CAY5067.1;
PIR: A01497; UTHUB.
BSSP: P01233; 1XUL.
GlycoSuiteDB: P01229;
MIM: 152780;
InterPro: IPR000359; Cys_knot.
InterPro: IPR001545; Glyco_hormone_beta.
PRINTS: PR00438; GFCYSKNOT.
PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
Hormone; Glycoprotein; Signal; Pseudohermaphroditism; Disease mutation.

FT SIGNAL 1 20
FT CHAIN 1 20 LUTROPIN BETA CHAIN.
FT DISULFID 21 141
FT DISULFID 29 77 BY SIMILARITY.
FT DISULFID 43 92 BY SIMILARITY.
FT DISULFID 46 130 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 113 120 BY SIMILARITY.
FT CARBOHYD 50 50 N-LINKED (GLCNAC...).
FT VARIANT 74 74 Q -> R (IN HYPOGONADISM; LACK OF RECEPTOR-BINDING).
FT CONFLICT 39 39 E -> Q (IN REF. 2).
FT CONFLICT 76 76 MISSING (IN REF. 2).
FT CONFLICT 132 135 HQQL -> PQH (IN REF. 2).
FT SEQUENCE 141 AA; 15345 MW; E4117623113F7C CRC64;
Query Match 70.0%; Score 544; DB 1; Length 141;
Best Local Similarity 85.1%; Pred. No. 2,3e-43; Indels 0; Gaps 0;
Matches 97; Conservative 6; Mismatches 11;
OY 2 SKEPLRCPRIATLAVKEGCPVCTVTTCAGCTPTMTVRVLQGLVPALPQVVCNVR 61
DB 21 SKEPLRCPRIATLAVKEGCPVCTVTTCAGCTPTMTVRVLQGLVPALPQVVCNVR 80
OY 62 DVRFESIRLPCPRGVNVPVSYVALSCQALCRSTRSTTCGGPRDPLTCDDPR 115
DB 81 DVRFESIRLPCPRGVNVPVSYVALSCQALCRSTRSTTCGGPRDPLTCDDPR 134

RESULT 4
CGHB_CALJA STANDARD; PRT; 164 AA.
AC P51500;
DT 01-OCT-1996 (Rel. 34, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 01-OCT-2000 (Rel. 40, Last annotation update)
DE Chorionic gonadotropin beta chain precursor (Chorionic gonadotropin beta subunit) (CG-beta).
GN CGB.
OS Callithrix jacchus (Common marmoset).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Platyrrhini; Callitrichidae;
OC Callithrix.
OX NCBI_TaxID=9483;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Placenta;
RA MEDLINE=96115012; PubMed=7492691;
RA Similia A.P.; Amato F.; Faast R.; Lopata A.; Berka J.; Norman R.J.;

RT *lutinizing hormone/chorionic gonadotropin bioactivity in the common
RT marmoset (Callithrix jacchus) is due to a chorionic gonadotropin
RT molecule with a structure intermediate between human chorionic
RT gonadotropin and human lutinizing hormone.*;
RL Biol. Reprod. 53:380-389(1995).
CC -!- FUNCTION: STIMULATES THE OVARIES TO SYNTHESIZE THE STEROIDS THAT
CC ARE ESSENTIAL FOR THE MAINTENANCE OF PREGNANCY AND A UNIQUE BETA
CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
CC -!- TISSUE SPECIFICITY: PLACENTA.
CC -!- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC THIS SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@sib-sib.ch).

EMBL: U04447; AAC00029.1;
HSSP: P01233; 1XUL.
InterPro: IPR000359; Cys_knot.
InterPro: IPR001545; Glyco_hormone_beta.
PRINTS: PR00438; GFCYSKNOT.
PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
Hormone; Glycoprotein; Signal.
FT SIGNAL 1 20
FT CHAIN 1 20 CHORIONADOTROPIN BETA CHAIN.
FT DISULFID 21 164
FT DISULFID 29 77 BY SIMILARITY.
FT DISULFID 43 92 BY SIMILARITY.
FT DISULFID 46 130 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 113 120 BY SIMILARITY.
FT CARBOHYD 50 50 N-LINKED (GLCNAC...).
FT CARBOHYD 146 146 N-LINKED (GLCNAC...).
FT SEQUENCE 164 AA; 17712 MW; 0CD92DDC2618FA6 CRC64;
Query Match 64.3%; Score 499.5; DB 1; Length 164;
Best Local Similarity 66.9%; Pred. No. 3.2e-39;
Matches 93; Conservative 15; Mismatches 30; Indels 1; Gaps 1;

OY 2 SKEPLRCPRIATLAVKEGCPVCTVTTCAGCTPTMTVRVLQGLVPALPQVVCNVR 61
DB 21 SKEPLRCPRIATLAVKEGCPVCTVTTCAGCTPTMTVRVLQGLVPALPQVVCNVR 80
OY 62 DVRFESIRLPCPRGVNVPVSYVALSCQALCRSTRSTTCGGPRDPLTCDDPR 121
DB 81 ELAFTSVRLPGCPGVNVPVSYVALSCQALCRSTRSTTCGGPRDPLTCDDPR 139
OY 122 SKAPPSLSPRLPQPSD 140
DB 140 SKDPPRLSPQLLEPAD 158

RESULT 5
LSHB_EQUBU STANDARD; PRT; 169 AA.
ID LSHB_EQUBU
AC O46641;
DT 15-DEC-1998 (Rel. 37, Created)
DT 15-DEC-1998 (Rel. 37, Last sequence update)
DT 15-JUL-1999 (Rel. 38, Last annotation update)
DE Lutropin/chorionic gonadotropin beta chain precursor (Lut-
DE h) (lutinizing hormone beta subunit).
GN LHB.

[illegible]

[illegible]

<hr/>					
RESULT 8					
LSHB_HORSE	STANDARD:	PRT:	169 AA.		
AC	POH751; P01234;				
AD	01-AGU-1988 (Rel. 08, Created)				
AE	01-JUL-1993 (Rel. 26, Last annotation update)				
AF	16-OCT-2001 (Rel. 40, Last annotation update)				
AG	Luteotropin chorion gonadotropin beta chain precursor (LSH-B/GG-B)				
AJ	(Lutealizing hormone beta subunit).				
AK	Equus caballus (Horse).				
AL	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;				
AM	Mammalia; Eutheria; Perissodactyla; Equidae; Equus.				
AN	NCB1_TextID=9796;				
AO	[1]				
AP	SOURCE FROM N.A.				
AQ	MEDLINE=92557035; PubMed=1379674;				
AR	Sherman G.B., Wolfe M.W., Farmer T.A., Clay C.M.,				
AS	Threadgill D.S., Sharp D.C., Nilsson J.H.;				
AT	"A single gene encodes the beta-subunits of equine luteinizing				
AV	hormone and chorionic gonadotropin beta-subunit."*				
AW	Mol. Endocrinol. 6:951-959(1992).				
AX	[2]				
AY	SOURCE OF 21-169.				
AZ	MEDLINE=97250476; PubMed=3298239;				
BA	Bousfield G.R., Liu W.K., Sugino H., Ward D.N.;				
BB	"Structural studies on equine glycoprotein hormones. Amino acid				
BC	sequence of equine lutropin beta-subunit."*				
BD	J. Biol. Chem. 262:8610-8620(1987).				
BE	[3]				
BF	SOURCE OF 21-169.				
BG	MEDLINE=97250476; PubMed=3298238;				
BH	Bousfield G.R., Liu W.K., Sugino H., Ward D.N.;				
BI	"Structural studies on equine glycoprotein hormones. Amino acid				
BJ	sequence of equine chorionic gonadotropin beta-subunit."*				
BK	J. Biol. Chem. 262:8603-8609(1987).				
BL	[4]				
BM	PARTIAL SEQUENCE.				
BN	Ward D.N., Moore W.T. Jr., Bursleigh B.D.;				
BO	"Structural studies on equine chorionic gonadotropin."*				
BP	J. Protein Chem. 1:263-280(1982).				
BQ	[5]				
BR	STRUCTURE OF CARBOHYDRATES.				
BS	MEDLINE=90235854; PubMed=23311995;				
BT	Damm J.B.L., Haard K., Kamerling J.P., van Dedem G.W.K.,				
BV	Vilegenthart J.F.G.;				
BW	"Structure determination of the major N- and O-linked carbohydrate				
BX	chains of the beta subunit from equine chorionic gonadotropin."*				
BY	Eur. J. Biochem. 189:175-183(1990).				
BZ	[6]				
CA	O-GLYCOSYLATION.				
CB	PubMed=11133668.				
CC	Bousfield G.R., Butney V.Y.,				
CD	"Identification of twelve O-glycosylation sites in equine chorionic				
CE	gonadotropin beta and equine luteinizing hormone beta by solid-phase				
CF	Edman degradation."*				
CG	Biol. Reprod. 64:136-147(2001).				
CH	[7]				
CI	FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING				
CJ	THE RELEASE OF SPERMATOCYTES.				
CK	-1- SUBUNIT: HETEROLOGOUS OF A COMMON ALPHA CHAIN AND A UNIQUE BETA				
CL	CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTOPIN.				
CM	LUTROPIN, FOLLITROPIN AND GONADOTROPIN.				
CN	-1- PTM: MICROHETEROGENEITY AT ASN-33. O-GLYCOSYLATION APPEARS TO				
CO	RESPONSIBLE FOR THE BETA SUBUNIT CONTRIBUTION TO THE DIFFERENCE				
CP	LN RECEPTOR-BINDING ACTIVITY BETWEEN LSH-B AND CG-B.				
CQ	-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN				
CR	FAMILY.				
CS	.....			
CT	.....			
CU	.....			
CV	.....			
CW	.....			
CX	.....			
CY	.....			
CZ	.....			
DA	.....			
DB	.....			
DC	.....			
DD	.....			
DE	.....			
DF	.....			
DG	.....			
DH	.....			
DI	.....			
DJ	.....			
DK	.....			
DL	.....			
DM	.....			
DN	.....			
DO	.....			
DP	.....			
DQ	.....			
DR	.....			
DS	.....			
DT	.....			
DU	.....			
DV	.....			
DW	.....			
DX	.....			
DY	.....			</

OC	Bovidae; Bovinae; Bos.
OX	NCBI_TaxID=9913;
RN	[1]

SEQUENCE FROM N.A.
MEDLINE=85207729; PubMed=2987241;
Virgin J.B., Silver B.J., Thomason A.R.;
The gene for the beta subunit of bovine luteinizing hormone encodes
a gonadotropin mRNA with an unusually short 5'-untranslated region.*;
J. Biol. Chem. 260:7072-7077(1985).
[2] SEQUENCE FROM N.A.
MEDLINE=95102375; PubMed=3838746;
Maurer R.A.
Analysis of several bovine lutropin beta subunit cDNAs reveals
heterogeneity in nucleotide sequence.*;
J. Biol. Chem. 260:4684-4687(1985).
[3]
SEQUENCE OF 21-139.
MEDLINE=74075724; PubMed=4770795;
Magdalin-Rogister G., Hennen G.;
Luteinizing hormone. The primary structures of the beta-subunit from
bovine and porcine species*;
Eur. J. Biochem. 39:335-353(1973).
[4] FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
[5] THE OVERALL STRUCTURE OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CHAIN WITHIN THE LUTROPIN GROUP SPECIFICITY TO THYROTROPIN,
LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
[6] SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
FAMILY.

THIS SWISS-PROT entry is copyright. It is produced through a collaboration
between the Swiss Institute of Bioinformatics and the EMBL outstation -
the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See <http://www.isib-sib.ch/announce/>)
or send an email to license@isib-sib.ch.

EMBL: M10077; AAA0623.1; -
SWISS: S00566; TRYPB
PIR: A01498; -

HSSP:	P01233:	1XUL
GlycoSulfDB:	P04651:	-
Interpro:	IPR000359:	Cys_knot.
Interpro:	IPR01400:	GF_cytnot.
Interpro:	IPR000359:	Glyco_Hormone_beta.
RefSeq:	PF00007:	CYCYSKNOT.
PRINTS:	PR00438:	CYCYSKNOT.
SMART:	SM00068:	GHB; 1
ProSITE:	PS00261:	GLYCO_HORMONE_BETA_1; 1.
ProSITE:	PS00689:	GLYCO_HORMONE_BETA_2; 1.
Hormone:	Signal;	Glycoprotein.
SIGNAL:	1	20
CHAIN:	21	141
FT	CD	1
FT	DISULFID	43
FT	DISULFID	92
FT	DISULFID	46
FT	DISULFID	130
LUTROPIN BETA CHAIN.		
BY SIMILARITY.		
BY SIMILARITY.		
BY SIMILARITY.		

[illegible]


```

QY      2   SKEDLRPRDPTNATLAVKESGCGVCTITWTFICAGTGGPFRVTCGVLPALPDVCYNTR 61
        I : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
DB     21   SSGPLRPLACQPINNTLAERKEAPCVITFTSICNGCYDSMKRVLPVLPPQRVCVTH 80
        I : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
QY      62   VRIIESIRLGCCPGPNVPVSVVALSCCALCRSRSTDCGSKPKDLTCDOPRFOD 118
        I : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
DB     81   ELRAFASVRLGCCPGVDPMVSPFVALSCGCHGCRSLSDCGCPGTQPLACDHPLPD 137
        I : : : : : : : : : : : : : : : : : : : : : : : : : : : : :

RESULT 10
TSGB  TSGB_PAT  STANDARD;          PRT;    141 AA.
TSGB AC
POL230;
21-JUL-1986 (Rel. 01, Created)
DT DT DT
21-JUL-1986 (Rel. 01, Last sequence update)
DE DE DE
16-OCT-2001 (Rel. 40, Last annotation update)
DE DE DE
tutropin beta chain precursor [luteinizing hormone beta subunit] (LSH-
beta) (LSH-B) (LH-B).
GN GN GN
LHB.
OS OS OS
Rattus norvegicus (Rat).
OX OX OX
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eumammalia; Rodentia; Sciurognathi; Muridae; Rattus.
NCBI TaxID=10116;
[1]
SEQUENCE FROM N.A.
STRAIN=SPRAGUE-DAWLEY;
RX RX RX
MEDLINE=81273573; Pubmed=6192440;
RX RX RX
CHIN W.M., Godine J.E., Klein D.R., Chang A.S., Tan L.K.,
RA RA RA
Habener J.F.;
RA RA RA
"Nucleotide sequence of the cDNA encoding the precursor of the beta
subunit of rat lutropin."
RN RN RN
Proc. Natl. Acad. Sci. U.S.A. 80:4649-4653(1983).
RX RX RX
SEQUENCE FROM N.A.
MEDLINE=85080043; Pubmed=6096374;
RX RX RX
Jameson L., Chin W.W., Hollenberg A.N., Chang A.S., Habener J.F.;
RA RA RA
"The gene encoding the beta-subunit of rat luteinizing hormone."
RX RX RX
Analysis of gene structure and evolution of nucleotide sequence.*;
RT RT RT
J. Biol. Chem. 259:15474-15480(1984).
RX RX RX
SEQUENCE OF 4-141 FROM N.A.
RX RX RX
STRAIN=Mutar Tamachi; TISSUE=Anterior pituitary;
RA RA RA
Kato Y., Ezashi T., Hirai T., Kato T.;
RT RT RT
"Strain difference in nucleotide sequences of rat glycoprotein hormone
subunit cDNAs and gene fragment.";
RT RT RT
Zool. Sci. 7:877-885(1990).
CC CC CC
-1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC CC CC
-1- SUBUNIT: HETEROIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CHAIN WHICH CONFERES BIOLOGICAL SPECIFICITY TO THYROTOPIN.
CC CC CC
FOUR OTHER FORMS OF THE GONADOTROPIN HORMONE ARE KNOWN.
CC CC CC
-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
FAMILY.
-----
THIS SWISS-PROT entry is copyright. It is produced through a collaboration
between the Swiss Institute of Bioinformatics and the EMBL outstation at
the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement. Usage by and for commercial
users send email to licencet@isb.sib.ch.
DR DR DR
EMBL; V01542; CAA24783.1; -
DR DR DR
ENBL; J00749; AAA96703.1; -
DR DR DR
ENBL; D00576; BAA00454.1; -
DR DR DR
PIR; A01498; UTBTB.
DR DR DR
PIR; S42527; S42527.
DR DR DR
HSSP; P01233; 1XUL.
DR DR DR
InterPro: IPRO00359; Cys_knot.
DR DR DR
InterPro: IPRO02400; GF_cysknot.
DR DR DR
InterPro: IPRO01545; Glyco_Hormone_beta.
DR DR DR
Flam; PF00007; Cys_knot; 1.

```

```

DR PR1M3: PR00438; GFCYCKENOT.
DR SHAP7: SH00068; GHB.1
DR PROSITE: PS00261; GLYC_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYC_HORMONE_BETA_2; 1.
KW Hormone; Signal; Glycoprotein.
FT SIGNAL 1 20
FT CHAIN 21 141 LUTROPIN BETA CHAIN.
FT DISULFID 29 77 BY SIMILARITY.
FT DISULFID 43 92 BY SIMILARITY.
FT DISULFID 54 108 BY SIMILARITY.
FT DISULFID 64 110 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 113 120 BY SIMILARITY.
FT CARBOHYD 33 33 N-LINKED (GLCNAC. .) (PROBABLE).
SQ SEQUENCE 141 AA; 15177 MW; 50796F8832F83BF CRC64;

Query Match 56.1%; Score 436; DB 1; Length 141;
Best Local Similarity 65.5%; Ref. No. 1.8e-33;
Matches 74; Conservative 16; Mismatches 23; Indels 0; Gaps 0;

QY 2 SKEPLPAPRPINATLAVEKQCPDTNTVITTCAGYCTPTRTVLQGLVLPALPVQVNCVR 61
DQ 2 SKEPLPAPRPINATLAVEKQCPDTNTVITTCAGYCTPTRTVLQGLVLPALPVQVNCVR 61
Db 21 SSGPLAPLCRVNMTAAENECFQITFTTSICAGYCFSPKRVLPALPVQVPCVTR 80
DY 62 DYVFSEICPCPGVNNPVYVAVALSCALCRSSITTCGPGKHPIKTCDDP 114
DQ 62 DYVFSEICPCPGVNNPVYVAVALSCALCRSSITTCGPGKHPIKTCDDP 114
Db 81 ELRFASVRLPCPGGVGVIPSPFVALSCRCPCGRLSSDCGGPRTQPTCDLP 133

RESULT 11
LSHB_CERSI STANDARD; PRT; 141 AA.
ID LSHB_CERSI
AC 077835; 019102;
DT 16-OCT-2001 (Rel. 40, Created)
DT 16-OCT-2001 (Rel. 40, Last sequence update)
DE LSHB_CERSI (Lutropin beta chain precursor (luteinizing hormone beta subunit) (LSH-
beta) (LSH-B) (LH-B)).
GN LH1 and LH2
OS Ceratotherium simum (White rhinoceros) (Square-lipped rhinoceros).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Perissodactyla; Rhinocerotidae; Ceratotherium.
OC NCBI_TaxId=9807;
RN [1] SEQUENCE FROM N.A.
RX MEDLINE=98389253; Pubmed=9723860;
RA Lund L.A. Sherman G.B.
RT *Duplication of the southern white rhinoceros (Ceratotherium simum
RT simum) luteinizing hormone beta subunit gene.*;
RL J. Mol. Endocrinol. 21:19-30(1998).
RN [2]
RC TISSUE=SPERMATOPHYTES;
RC SEQUENCE OF 7-141 FROM N.A.
RA SHELTON=972988; Pubmed=9205757;
RA SHELTON=218; Lund and Bunkel D., Wynn R.J.;
RT *Characterization and phylogenetic significance of rhinoceros
RT luteinizing hormone beta (LHbeta) subunit messenger RNA structure,
RT complementary DNA sequence and gene copy number.*;
RL Gen. 195:131-139(1997).
RC [-1] FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
RC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC [-1] SUBUNIT: HETEROID OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC CHAIN.
CC LUTROPIN FOLLITROPIN AND GONADOTROPIN
CC [-1] SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC at the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (see http://www.isb-sib.ch/announcement)

```

```

CC CC      or send an email to license@lsb-sib.ch).
DR DR      ENBL; AF024521; AAC36049.1;
DR DR      ENBL; AF024520; AAC36048.1;
DR DR      ENBL; U72659; AAB71983.1;
DR DR      HSPS; P01233; LXUL.
DR DR      InterPro: IPR000359; Cys_knot.
DR DR      InterPro: IPR002400; GF_Cysknot.
DR DR      InterPro: IPR001545; Glyco_hormone_beta.
DR DR      InterPro: PF00007; Cys_knot; 1.
DR DR      Pfam; PF00068; Cys_knot; 1.
DR DR      SMART; SM0068; Cys_knot; 1.
DR DR      PROSITE; PS00261; GLYC_HORMONE_BETA_1; 1.
DR DR      PROSITE; PS00689; GLYC_HORMONE_BETA_2; 1.
DR KW      Hormone; signal; Glycoprotein.
FT FT      SIGNAL      1      20
FT FT      CHAIN      1      20
FT FT      LUTROPIN BETA CHAIN.
FT FT      DISULFID      29      77
FT FT      DISULFID      43      92
FT FT      DISULFID      56      108
FT FT      DISULFID      58      110
FT FT      DISULFID      113      120
FT FT      DISULFID      33      33
FT FT      CARBOHYD
FT FT      CONFLICT      22      22
FT FT      SEQUENCE      141 AA; 14930 MW; FFEED157C51976C9 CRC64;
OY OY      Query Match
DB DB      Seq. Locs 75; Similarity 55.3%; Score 430; DB 1; Length 141;
DB DB      Matches 75; Conservative 12; Mismatches 26; Indels 0; Gaps 0;
OY OY      2 SKEPLRCPNPATLAVEKGGPCVCTIVNTTTCAGCYGPTFRVQLGVLPALPQVCNVR 61
DB DB      1 : ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
OY OY      21 SRGLRPLCRPNATLAAENACPVCTFTTTCAGCYCPSMRVLPALPAPQVCVTH 80
DB DB      1 : ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
OY OY      62 DVRFESTRLPGCPGPNVSYAVASCCALCRSTTDCGGGKPHRLPCTDDP 114
DB DB      1 : ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
DB DB      81 ELRFASRLPGCPGVDPMWFFVALSCRGKCRGLSSDCGGGAPPLACDRP 133
OY OY      RESULT 12
DB DB      LSHB_PIG
DB DB      ID LSHB_PIG STANDARD; PRT; 141 AA.
DB DB      AC P01232;
DB DB      01-JUL-1986 (Rel. 01, Created)
DB DB      01-NOV-1990 (Rel. 16, Last sequence update)
DB DB      16-OCT-2001 (Rel. 40, Last annotation update)
DB DB      16-OCT-2001 (Rel. 40, Last annotation update)
DB DB      (LSH-B) Cys_knot precursor (luteinizing hormone beta subunit) (LSH-
DB DB      beta) (LSH-B).
DB DB      LSHB
DB DB      SLS scrofa (pig).
DB DB      CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
DB DB      CC Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
DB DB      NCBI_TaxId=9823;
DB DB      [1]
DB DB      SEQUENCE FROM N.A.
DB DB      MEDLINE=91063934; PubMed=1701088;
DB DB      RRA Medent; Hirai T., Kato Y., Wakabayashi K., Kato Y.;
DB DB      RR "The beta subunit of porcine LH: clusters of GC boxes
DB DB      RR and CACC elements."
DB DB      RL J. Mol. Endocrinol. 5:137-146(1990).
DB DB      [2]
DB DB      SEQUENCE FROM N.A.
DB DB      MEDLINE=89306142; PubMed=2744222;
DB DB      RRA Kato Y., Hirai T.;
DB DB      RR "Cloning and DNA sequence analysis of the cDNA for the precursor of
DB DB      RR porcine luteinizing hormone (LH) beta subunit."
DB DB      RL Mol. Cell. Endocrinol. 62:47-53(1989).
DB DB      [3]
DB DB      SEQUENCE OF 21-139
DB DB      MEDLINE=74075724; PubMed=4770795;
DB DB      RRA Maguini-Rogister G., Hennen G.;
DB DB      RR "Luteinizing hormone. The primary structures of the beta-subunit from
DB DB      RR

```

[illegible]

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopteri; Atherinomorpha; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
NCBI_TaxID=9940,
[1]
SEQUENCE FROM N.A.
MEDLINE=93351742; PubMed=8349025;
Brown P., McNeilly J.R., Wallace R.M., McNeilly A.S., Clark A.J.;
RT "Characterization of the ovine LH beta-subunit gene: the promoter
RT directs gonadotrope-specific expression in transgenic mice.*";
RL Mol. Cell. Endocrinol. 93:157-165(1993).
RP
SEQUENCE FROM N.A.
TISSUE=Pituitary;
MEDLINE=90245669; PubMed=2336396;
D'Angelo-Bernard G., Mounni M., Jutisz M., Jutisz R.;
RT "Cloning and sequence analysis of the cDNA for the precursor of the
RT beta subunit of ovine luteinizing hormone.*";
RL Nucleic Acids Res. 18:2175-2175(1990).
RP
SEQUENCE OF 21-139.
MEDLINE=72211145; PubMed=4556309;
Liu W.-K., Nahm H.S., Sweeney C.M., Holcomb G.N., Ward D.N.;
RT "The primary structure of ovine luteinizing hormone. II. The amino
RT acid sequence of the reduced, S-carboxymethylated A-subunit (LH-
RT beta).*";
RL J. Biol. Chem. 247:4365-4381(1972).
RP
SEQUENCE OF 21-139.
MEDLINE=73190035; PubMed=4575435;
Salim M.R., Samy T.S.A., Pepkoff R., Li C.H.;
RT "The primary structure of ovine interstitial cell-stimulating
RT hormone. II. The beta-subunit.*";
RL Arch. Biochem. Biophys. 153:572-586(1972).
RP
PRELIMINARY ASSIGNMENT OF DISULFIDE BONDS.
MEDLINE=7608152; PubMed=120191;
Chen Y.-C., Wu M.-Y., Wu C.-S.;
RT "The primary structure of ovine interstitial cell stimulating
RT hormone. IV: Disulfide bridges of the beta subunit.*";
RL Int. J. Pept. Protein Res. 7:487-493(1975).
RP
STRUCTURE OF CARBOHYDRATE.
MEDLINE=91006170; PubMed=2209620;
Weisshaar G., Hiyaana J.G., Renwick A.G.C.;
RT "Site-specific N-glycosylation of ovine lutropin. Structural analysis
RT by endoglycosidase digestion and mass spectrometry.*";
RL Biochem. Biophys. Res. Commun. 192:141-151(1990).
RP
FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
-1 SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
-1 SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
FAMILY.
THIS SWISS-PROT entry is copyright. it is produced through a collaboration
between the Swiss Institute of bioinformatics and the EMBL outstation -
the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See http://www.isb-sib.ch/announc/
or send an email to licenselib@isb-sib.ch).
EMBL; S54659; AB274919.1; --
EMBL; X32486; U00392.1; --
EMBL; X32486; U00392.1; --
PIR; S09232; S09232.
HSPG; P01233; LXUJ.
GlycoSuiteDB; P01231; --
InterPro; IPR000359; Cys_knot.
InterPro; IPR002400; GF_cysknott.
InterPro; IPR001545; Glyco_hormone_beta.

DR	fEmm_ PF00007; Cys_knot; 1.
DR	SMITTS; Q60849; GPCRSNOT.
DR	SNIKE; AML0001; GPCRSNOT.
DR	PROSITE; PS00361; GLYCO_HORMONE_BETA_1; 1.
DR	PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
KM	Hormone; Signal; Glycoprotein.
FT	SIGNAL 1 20
FT	CHAIN 21 141
FT	LUTROPIN BETA CHAIN.
FT	BY SIMILARITY.
FT	DISULFID 29 77
FT	DISULFID 43 92
FT	DISULFID 46 130
FT	DISULFID 48 130
FT	DISULFID 58 110
FT	DISULFID 113 120
FT	MOD_RES 21 21
FT	BLOCKED.
FT	CARBOHYD 33 33
FT	N-LINKED (GLCNAC. .).
FT	/LINK-CAR_000046.
FT	MISSING (IN SOME MOLECULES).
FT	Q -> E (IN REF. 4).
FT	R -> D (IN REF. 2).
FT	R -> Q (IN REF. 2).
FT	PM -> PM (IN REF. 4).
FT	E -> Q (IN REF. 4).
FT	GP -> PG (IN REF. 3 AND 4).
FT	CONFLECT 132 123
FT	CONFLECT 136 126
FT	CONFLECT 141 141
FT	SEQUENCE 141 AA; 15184 MW; C59E7G0AA5A9DC CRG64;
Qy	Query Match
Dd	Best Local Similarity 64.1%; Pred. No. Re-33;
Dd	Matches 75; Conservative 14; Mismatches 28; Indels 0; Gaps
Qy	2 SKEPRLRCPGNVAVLVEKEKCVCIIVTTCICAGCTCPTVRVLSGVLPALPVCNVR 61
Dd	1 : | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Dd	21 SRGRPLRCLPDPINATAAEKEACPVCIPTFTSCAGTCSLMKRVLPVLPPORVCTIH 80
Qy	62 DVRESTRIPCRPGNVVVSTVAVALSCALCRSTTTCCGPKHPIUICDDPRPD 118
Dd	1 : | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Dd	81 ELRRASVNLGCQPPGDVHWSPFLSVLCGCGRCILSSDTGGPRTPOACLADHPFD 137
RESULT 14	
LSHB_MOUSE	STANDARD PRT: 141 AA.
ID LSHB_MOUSE	Q60844:
AC	009108; Q60844:
DT	01-NOV-1997 (Rel. 35, Created)
DT	16-OCT-2001 (Rel. 40, Last sequence update)
DE	*Cloning of the mouse gonadotropin beta-subunit-encoding genes, II.
DE	(Lutropin-beta) (LHRH-related hormone precursor (lutelinizing hormone beta subunit)) (LSH-
DE	beta) (LSH-B) (LH-B).
OS	Mus musculus (Mouse).
GN	LHB.
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX	NCBI_TaxID=10090;
ON	(1)
ON	REFERENCE FROM N.A.
RC	STEADLINE=129/SV.
RX	MEHLING=96125216; PubMed=8543188;
RT	Kumar T.R., Matzuk M.M.;
RT	"Cloning of the mouse gonadotropin beta-subunit-encoding genes, II.
RT	Structure of the lutelinizing hormone beta-subunit-encoding genes.";
RT	Gene 166:335-336(1995).
[2]	
RP	SEQUENCE OF 18-122 FROM N.A.
RP	STRAIN=C57BL/6 x DBA; TISSUE=Anterior pituitary;
RC	FROM Tissue Culture; Cell Type=Tumors; Species=Mus;
RC	Strain=Stock#1997; from Fawc/Jax; GenBank/DBA/databases
CC	1"-FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
CC	THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC	-1- SUBUNIT: HETERO DIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC	CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTOPIN,
CC	LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
CC	-1- SIMILARITY: BELONGS TO THE GONADOTROPIN HORMONES BETA CHAIN

CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities and their subsidiaries is not permitted (see <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC -----

DR EMBL: AF106915; AAF15966.1; .
 DR HSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR002400; GF_CysKnot.
 DR Pfam: PF00007; Cys_Knot; 1.
 DR SMART: SM00488; GDCYSKNOT.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; PARTIAL.
 KW Hormone; Signal; Glycoprotein.
 FT SIGNAL 1 20 BY SIMILARITY.
 FT CHAIN 21 >128 LUTROPIN BETA CHAIN.
 FT DISULFID 29 77 BY SIMILARITY.
 FT DISULFID 43 92 BY SIMILARITY.
 FT DISULFID 54 106 BY SIMILARITY.
 FT DISULFID 58 110 BY SIMILARITY.
 FT DISULFID 113 120 BY SIMILARITY.
 FT CARBOHYD 33 33 N-LINKED (GLCNAC...) (POTENTIAL).
 FT NON_TER 128 128
 SQ SEQUENCE 128 AA: 13660 MW: 889658 E808625 CRC64;

Query Match 52.6%; Score 409; DB 1; Length 128;
 Best Local Similarity 63.9%; Pred. No. 5e-31;
 Matches 69; Conservative 16; Mismatches 23; Indels 0; Gaps 0;

OY 2 SKEPLRCPINATLAVKEGCPVITVTTCAGYCGTNTVYLOGVLPALPQVYKVR 61
 Db 21 SRGLPLCRPVNATLAENACVCTFTSTGACGCFSAVRLPALPVPVPCVTH 80

OY 62 DYVESIRLPCGPGVNPVSVYVALSCQALCRSTDCGPKDPL 109
 Db 81 ELHFASVRLPCGPGVNPVSVYVALSCQALCRSTDCGPKDPL 128

RESULT 17
 LSHB_BALAC STANDARD; PRT; 118 AA.
 AC P31088; 1993 (Rel. 27, Created)
 DT 01-OCT-1993 (Rel. 27, Last sequence update)
 DT 16-OCT-2001 (Rel. 40, Last annotation update)
 DE Lutropin beta chain (Luteinizing hormone beta subunit) (LSH-beta)
 DE (LSH-B) (LH-B).
 GN LHB.
 OS Balaenoptera acutorostrata (Mink whale) (lesser rorqual).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Mysticeti;
 OC Balaenopteridae; Balaenoptera.
 OX NCBI_TaxID=9767;
 RN [1]
 RP SEQUENCE
 RA Karasov V.S., Pankov Y.A.;
 RT "Amino acid sequence of reduced and carboxymethylated alpha- and beta-
 RT subunits of the little picked whale luteinizing hormone.";
 RL Biochimica 50:1972-1986(1985).
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
 CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
 CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
 CC FAMILY.
 CC PIR: P01233; IXUL.
 DR HSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.

DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR002400; GF_CysKnot.
 DR Pfam: PF00007; Cys_Knot; 1.
 DR SMART: SM00488; GDCYSKNOT.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; FALSE_NEG.
 KW Hormone; Glycoprotein.
 FT DISULFID 9 57 BY SIMILARITY.
 FT DISULFID 23 72 BY SIMILARITY.
 FT DISULFID 26 110 BY SIMILARITY.
 FT DISULFID 34 88 BY SIMILARITY.
 FT DISULFID 38 90 BY SIMILARITY.
 FT DISULFID 98 100 BY SIMILARITY.
 FT CARBOHYD 13 13 N-LINKED (GLCNAC...).
 SQ SEQUENCE 118 AA: 12414 MW: 039229 EFC480F5D CRC64;

Query Match 52.4%; Score 407; DB 1; Length 118;
 Best Local Similarity 56.0%; Pred. No. 7e-31;
 Matches 70; Conservative 18; Mismatches 27; Indels 10; Gaps 1;

OY 5 PLRPPCPINATLAVKEGCPVITVTTCAGYCGTNTVYLOGVLPALPQVYKVR 64
 Db 4 PLRPLCRPVNATLAENACVCTFTSTGACGCFSAVRLPALPVPVPCVTH 63

OY 65 FESIRLPCGPGVNPVSVYVALSCQALCRSTDCGPKDPL 124
 Db 64 FASIRLPCGPGVNPVSVYVALSCQALCRSTDCGPKDPL 113

OY 125 PPSEL 129
 Db 114 PRGL 118

RESULT 18
 LSHB_PHYCA STANDARD; PRT; 118 AA.
 AC P25330;
 DT 01-MAY-1992 (Rel. 22, Created)
 DT 01-MAY-1992 (Rel. 22, Last sequence update)
 DT 16-OCT-2001 (Rel. 40, Last annotation update)
 DE Lutropin beta chain (Luteinizing hormone beta subunit) (LSH-beta)
 DE (LSH-B) (LH-B).
 GN LHB.
 OS Physeter catodon (Sperm whale) (Physeter macrocephalus).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti;
 OC Physetridae; Physeter.
 OX NCBI_TaxID=9755;
 RN [1]
 RP SEQUENCE
 RA MEDLINE=87032654; PubMed=3771098;
 RA Pankov Y.A., Karasov V.S.;
 RT "Primary structure of sperm whale luteinizing hormone.";
 RL Int. J. Pept. Protein Res. 28:124-129(1986).
 RN [2]
 RP SEQUENCE
 RA MEDLINE=87032654; PubMed=6466737;
 RA Pankov Y.A., Karasov V.S.;
 RT "Luteinizing hormone of the sperm whale. Amino acid sequences of
 RT reduced and carboxymethylated beta-subunits.";
 RL Biochimica 49:1004-1018(1984).
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
 CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
 CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
 CC FAMILY.
 CC PIR: P01233; IXUL.
 DR HSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.

[illegible]

```

CC or send an email to license@isb-sib.ch).
CC EMBL: AF017448; AAC96019.1; -.
CC EMBL: AF090388; AAC63526.1; -.
CC EMBL: AF017448; AAC96019.1; -.
CC DR InterPro: IPR000359; Cys.knot.
CC DR Pfam: PF00007; Cys.knot; 1.
CC DR SMART: SM00068; GHB; 1.
CC DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
CC DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
CC KW Hormone; Signal; Glycoprotein.
CC FT SIGNAL 1 22 BY SIMILARITY.
CC FT CHAIN 23 141 LUTROPIN BETA CHAIN.
CC FT DISULFID 30 78 BY SIMILARITY.
CC FT DISULFID 44 93 BY SIMILARITY.
CC FT DISULFID 47 131 BY SIMILARITY.
CC FT DISULFID 55 109 BY SIMILARITY.
CC FT DISULFID 59 111 BY SIMILARITY.
CC FT DISULFID 114 121 BY SIMILARITY.
CC FT CARBOHYD 34 34 N-LINKED (GLCNAC...) (POTENTIAL).
CC SQ SEQUENCE 141 AA; 15060 MW; C6CF980363C4EE0 CRC64;

Query Match 50.6%; Score 393; DB 1; Length 141;
Best Local Similarity 62.4%; Pred. No. 1.6e-29;
Matches 68; Conservative 11; Mismatches 30; Indels 0; Gaps 0;

QY 6 LRPCRPINATIAVEKGCPCVITNTTICAGYCPMTVRVLQVLPALPQVYVYRDVRF 65
DB 26 LRLCPRTNATLAESDAPCVCTFTTTICAGYCPMSVYVLPALPQVYVYRELSP 85
QY 66 ESIRLPCRGVNVVSYVALSCACALCRSTTDCGPKDHLTCDDP 114
DB 86 SSIRLPCPGVDPFISFPVALSCGCSGLSHSDCGGPRARPHLCRTP 134

RESULT 21
ID GTH2_CARAU STANDARD: PRT; 140 AA.
AC Q98849;
DT 16-OCT-2001 (Rel. 40, Created)
DT 16-OCT-2001 (Rel. 40, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH).
OS Carassius auratus (Goldfish).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Carassius.
OX NCBI_TaxID=7957;
RN SEQUENCE FROM N.A.
RC TISSUE=Pituitary;
RX MEDLINE=97242868; PubMed=9073500;
RA Yoshida Y., Kobayashi M., Kato Y., Aida K.;
RT "Molecular cloning of the cDNAs encoding two gonadotropin beta subunits (GTH-I beta and -II beta) from the goldfish, Carassius auratus.";
RT Gen. Comp. Endocrinol. 105:379-389(1997).
RL [2]
RP SEQUENCE FROM N.A.
RA Kim I.-C., Yoshida Y., Suetake H., Kobayashi M., Aida K.;
RT "Isolation and characterization of gonadotropin II beta subunit gene in goldfish, Carassius auratus.";
RA Fisheries Sci. 65:800-801(1999).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its

```

```

CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC EMBL: D88024; BAB13531.1; -.
CC EMBL: AB015596; BAB86658.1; -.
CC DR RSP: P01233; IXL.
CC DR InterPro: IPR000359; Cys.knot.
CC DR InterPro: IPR002400; GF_Cysknot.
CC DR Pfam: PF00007; Cys.knot; 1.
CC DR PRINTS: PR00438; GFCYSKNOT.
CC DR SMART: SM00068; GHB; 1.
CC DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
CC DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
CC KW Signal; Hormone; Glycoprotein.
CC FT SIGNAL 24 140 POTENTIAL.
CC FT CHAIN 29 77 BY SIMILARITY.
CC FT DISULFID 43 92 BY SIMILARITY.
CC FT DISULFID 46 130 BY SIMILARITY.
CC FT DISULFID 54 108 BY SIMILARITY.
CC FT DISULFID 58 110 BY SIMILARITY.
CC FT DISULFID 113 120 BY SIMILARITY.
CC FT CARBOHYD 33 33 N-LINKED (GLCNAC...) (POTENTIAL).
CC SQ SEQUENCE 140 AA; 15533 MW; IBE65362979ADFA CRC64;

Query Match 39.0%; Score 303; DB 1; Length 140;
Best Local Similarity 54.3%; Pred. No. 2.8e-21;
Matches 51; Conservative 16; Mismatches 27; Indels 0; Gaps 0;

QY 8 LRPCRPINATIAVEKGCPCVITNTTICAGYCPMTVRVLQVLPALPQVYVYRDVRF 67
DB 27 PCEPVPNTVAVKEGCPKCVLQTTICSGHCLKEPKSTFSTVYQHVCTYRDVRET 86
QY 68 IRLPCRGVNVVSYVALSCACALCRSTTDC 101
DB 87 VLRLPCPGVDPFIRITPVALSCGSLCTNQTSDC 120

RESULT 22
ID GTH2_CYPCA STANDARD: PRT; 144 AA.
AC P01235;
DT 21-JUL-1986 (Rel. 01, Created)
DT 01-MAY-1992 (Rel. 22, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH) (Common carp).
OS Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Cyprinus.
OX NCBI_TaxID=7962;
RN SEQUENCE FROM N.A.
RC MEDLINE=89233593; PubMed=3246480;
RA Chang Y.-S., Huang C.-J., Huang F.-L., Lo T.-B.;
RT "Primary structures of carp gonadotropin subunits deduced from cDNA nucleotide sequences.";
RT Int. J. Pept. Protein Res. 32:556-564(1988).
RL [1]
RP SEQUENCE FROM N.A.
RA Chang Y.-S., Huang F.-L., Lo T.-B.;
RL Submitted (MAY-1991) to the EMBL/GenBank/DBJ databases.
RN (3)
RX MEDLINE=78124308; PubMed=607993;
RA Jolles J., Bursaux-Gerard E., Fontaine Y.-A., Jolles P.;
RT "The evolution of gonadotropins: some molecular data concerning a non-mammalian pituitary gonadotropin, the hormone from a teleost fish (Cyprinus carpio L.).";
RT

```

Biochimie 59:893-898(1977).
 CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
 CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
 CC
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announcement/> or send an email to license@isb-sib.ch).
 CC
 DR EMBL: X59888; CAA42542.1;
 DR EMBL: X59889; CAA42543.1;
 DR PIR: S29677; S29678;
 DR PIR: S29678; S29678;
 DR PIR: A01504; UTCAB.
 DR PIR: J0462; J0462.
 DR HSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR002400; GP_cysknot.
 DR Pfam: PF00007; Glyco_hormone_beta.
 DR Pfam: PF00007; Glyco_hormone_beta.
 DR PRINTS: PR00438; GPCYSKNOT.
 DR SMART: SM00688; GHB; 1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 DR KW Hormone; Glycoprotein; Signal.
 FT SIGNAL 1 27
 FT CHAIN 28 142 GONADOTROPIN BETA-II CHAIN.
 FT PROPEP 143 144
 FT DISULFID 33 81 BY SIMILARITY.
 FT DISULFID 33 81 BY SIMILARITY.
 FT DISULFID 58 112 BY SIMILARITY.
 FT DISULFID 58 112 BY SIMILARITY.
 FT DISULFID 62 114 BY SIMILARITY.
 FT DISULFID 117 124 BY SIMILARITY.
 FT CARBOHYD 37 37 N-LINKED (GLCNAC...)(PROBABLE).
 SQ SEQUENCE 144 AA: 16039 MW: 854FEB0D4A39DCFB CRC64:
 Query Match 39.0%; Score 303; DB 1; Length 144;
 Best Local Similarity 54.3%; Pred. No. 2.9e-21;
 Matches 51; Conservative 16; Mismatches 27; Indels 0; Gaps 0;
 QY 8 PCRPNATLAVKESGCPVCTVTTTCAGCTPTMTVQLGVLPALQVQVNCVNRVRES 67
 DB 31 PCPEPVETAVKESGCPVCTVTTTCAGCTPTMTVQLGVLPALQVQVNCVNRVRES 90
 QY 68 IRLPGCPGVNPNVSYVALSCDCLCRSTTDC 101
 DB 91 VRLPDCPPGVDPHTVTPVVALSCDCLCRSTTDC 124
 RESULT 23
 ID GTH2_HYPMO STANDARD; PRT; 141 AA.
 AC P37038; 1994 (Rel. 29, Created)
 DT 01-JUN-1994 (Rel. 40, Last sequence update)
 DT 16-OCT-2001 (Rel. 40, Last annotation update)
 DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH).
 OS Hypophthalmichthys molitrix (Silver carp).
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi; Cypriniformes; Cyprinidae; Hypophthalmichthys.
 CC NCBI_TaxID=13095;
 CC [1]
 CC SEQUENCE FROM N.A., AND PARTIAL SEQUENCE.
 RP TISSUE-Pituitary;
 RC Chang Y.S., Huang F.-L., Liu C.S., Lo T.-B.;
 CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
 CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
 CC
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial

Chang Y.S., Huang C.J., Huang F.-L., Liu C.S., Lo T.-B.;
 RT *Purification, characterization, and molecular cloning of gonadotropin subunits of silver carp (Hypophthalmichthys molitrix).
 RL Gen. Comp. Endocrinol. 78:23-33(1990).
 CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
 CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
 CC
 DR PIR: B60626; B60626.
 DR HSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR002400; GP_cysknot.
 DR Pfam: PF00007; Glyco_hormone_beta.
 DR Pfam: PF00007; Glyco_hormone_beta.
 DR PRINTS: PR00438; GPCYSKNOT.
 DR SMART: SM00688; GHB; 1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 DR KW Hormone; Glycoprotein; Signal.
 FT SIGNAL 1 24
 FT CHAIN 25 139 GONADOTROPIN BETA-II CHAIN.
 FT PROPEP 140 141
 FT DISULFID 30 78 BY SIMILARITY.
 FT DISULFID 44 93 BY SIMILARITY.
 FT DISULFID 47 131 BY SIMILARITY.
 FT DISULFID 52 109 BY SIMILARITY.
 FT DISULFID 59 113 BY SIMILARITY.
 FT DISULFID 114 121 BY SIMILARITY.
 FT CARBOHYD 34 34 N-LINKED (GLCNAC...)(POTENTIAL).
 SQ SEQUENCE 141 AA: 15856 MW: A42C48FE983EEA6 CRC64:
 Query Match 38.7%; Score 301; DB 1; Length 141;
 Best Local Similarity 54.3%; Pred. No. 4.4e-21;
 Matches 51; Conservative 15; Mismatches 28; Indels 0; Gaps 0;
 QY 8 PCRPNATLAVKESGCPVCTVTTTCAGCTPTMTVQLGVLPALQVQVNCVNRVRES 67
 DB 28 PCPEPVETAVKESGCPVCTVTTTCAGCTPTMTVQLGVLPALQVQVNCVNRVRES 87
 QY 68 IRLPGCPGVNPNVSYVALSCDCLCRSTTDC 101
 DB 88 VRLPDCPPGVDPHTVTPVVALSCDCLCRSTTDC 121
 RESULT 24
 ID GTH2_CTEID STANDARD; PRT; 146 AA.
 AC P30984; 1993 (Rel. 26, Created)
 DT 01-JUL-1993 (Rel. 40, Last sequence update)
 DT 16-OCT-2001 (Rel. 40, Last annotation update)
 DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH) (Fragment).
 OS Ctenopharyngodon idella (Grass carp).
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi; Cypriniformes; Cyprinidae; Ctenopharyngodon.
 CC NCBI_TaxID=7959;
 CC [1]
 CC SEQUENCE FROM N.A.
 RP TISSUE-Pituitary;
 RC Chang Y.S., Huang F.-L., Liu C.S., Lo T.-B.;
 CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
 CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
 CC
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial


```
CC entities requires a license agreement (see http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: X61051; CAA4385.1; -.
DR SRS: S01933; S19763.
DR HSP: S01933; S19763.
DR InterPro: IPR000359; Cys_knot.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT NON_TER 1 1
FT SIGNAL <1 28 BY SIMILARITY.
FT CHAIN 29 146 GONADOTROPIN BETA-II CHAIN.
FT DISULFID 49 98 BY SIMILARITY.
FT DISULFID 52 136 BY SIMILARITY.
FT DISULFID 60 114 BY SIMILARITY.
FT DISULFID 64 116 BY SIMILARITY.
FT DISULFID 119 126 BY SIMILARITY.
FT CARBOHYD 39 39 N-LINKED (GLCNAC... ) (POTENTIAL).
SQ SEQUENCE 146 AA; 16320 MW; 691734446C679082 CRC64;
Query Match 38.7%; Score 301; DB 1; Length 146;
Best Local Similarity 34.3%; Pred. No. 4.9e-21;
Matches 31; Conservative 15; Mismatches 26; Indels 0; Gaps 0;
OY 8 PRCRPINATLAVKGGPCVITVNTICAGYCPMTVRVLOGVLPALPQVYCHYRVRPES 67
DB 33 PCPEPVNETVAVEKGGPKCLVFTTICSGRLTKPEYKSPFTVQHVCTYRDVRYET 92
OY 68 IRLPGCPGVNPNVSYAVALSQCALCRSTTDC 101
DB 93 VRLPPCPGVDPHVTYIPVALSCDCLMTDTSDC 126
RESULT 25
ID GTH2_ONCKE STANDARD; PRT: 142 AA.
AC P10256;
DT 01-MAR-1989 (Rel. 10, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta).
OS Oncorhynchus keta (Chum salmon).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Actinopterygii; Resopirigii; Teleostei; Euteleostei;
OC Proteobacteria; Salmoniformes; Salmonidae; Oncorhynchus.
NCBI_TaxID=8016;
RN (1)
RP SEQUENCE FROM N.A.
RX MEDLINE=90045849; PubMed=2813416;
RA Sekine S., Saito A., Itoh H., Kawachi H., Itoh S.;
RT *Molecular cloning and sequence analysis of chum salmon gonadotropin
RT cDNAs.*;
RT Proc. Natl. Acad. Sci. U.S.A. 86:8645-8649(1989).
RX MEDLINE=89051031; PubMed=3192067;
RA Itoh H., Suzuki K., Kawachi H.;
RT *The complete amino acid sequences of beta-subunits of two distinct
RT chum salmon GTHs.*;
RL Gen. Comp. Endocrinol. 71:438-451(1988).
CC -!- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -!- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -!- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Data Bank
CC the European Bioinformatics Institute. There are no restrictions on its
```

```
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: X27154; AAA49409.1; -.
DR SRS: S01933; S19763.
DR HSP: S01933; S19763.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GF_Cys_knot.
DR Pfam: PF00007; Cys_knot; 1.
DR PRINTS: PR00438; GFCYSKNOT.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT CHAIN 24 142 GONADOTROPIN BETA-II CHAIN.
FT DISULFID 29 77 BY SIMILARITY.
FT DISULFID 43 92 BY SIMILARITY.
FT DISULFID 46 130 BY SIMILARITY.
FT DISULFID 54 108 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 113 120 BY SIMILARITY.
FT CARBOHYD 39 39 N-LINKED (GLCNAC... ).
FT VARIANT 73 73 T -> K.
FT VARIANT 86 86 T -> K.
SQ SEQUENCE 142 AA; 15872 MW; E31E117DA235C486 CRC64;
Query Match 37.6%; Score 292; DB 1; Length 142;
Best Local Similarity 50.5%; Pred. No. 2.9e-20;
Matches 51; Conservative 17; Mismatches 33; Indels 0; Gaps 0;
OY 1 PSKEPLRPRCPINATLAVKGGPCVITVNTICAGYCPMTVRVLOGVLPALPQVYCHY 60
DB 20 PVESLQMQPCPIQNTVSLKGGPCVLTQVTPGSGHCYKPEYKSPFTVQHVCTY 79
OY 61 RQVAFESIRLPGCPGVNPNVSYAVALSQCALCRSTTDC 101.
DB 80 RDVRYETIRLPGCPGVNPNVSYAVALSQCALCRSTTDC 120
Search completed: October 11, 2002, 11:57:35
Job time : 26 secs
```

GenCore version 5.1.3
Copyright (c) 1993 - 2002 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: October 11, 2002, 11:26:58 ; Search time 70 Seconds
(without alignments)
348.461 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 175KELPAPRCFPMATLAVE.....SKAPPSPSPSLPQPSDT 141
Sequence: 1 PSKEPLAPRCFPMATLAVE.....SKAPPSPSPSLPQPSDT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 17294929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 50 summaries

Database : SPTREMBL_19.*
1: sp_archaea.*
2: sp_bacteria.*
3: sp_fungi.*
4: sp_human.*
5: sp_invertebrate.*
6: sp_mammal.*
7: sp_mollusc.*
8: sp_oncogene.*
9: sp_plant.*
10: sp_plant.*
11: sp_rodent.*
12: sp_virus.*
13: sp_virus.*
14: sp_unclassified.*
15: sp_virus.*
16: sp_bacteriophage.*
17: sp_archaea.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	631	81.2	165	6 Q9BEH1	Q9BEH1 macaca fasc
2	626	80.6	165	6 Q9BEH2	Q9BEH2 macaca fasc
3	616	79.3	165	6 Q9BEH3	Q9BEH3 macaca fasc
4	618	79.3	165	6 Q9BEH4	Q9BEH4 macaca fasc
5	448	57.7	142	6 Q9BEH5	Q9BEH5 mus musculus
6	435	56.0	139	11 Q62778	Q62778 rattus norv
7	400	51.5	127	11 Q92446	Q92446 cavia porce
8	400	51.5	135	11 Q92447	Q92447 cavia porce
9	400	51.5	141	11 Q92448	Q92448 cavia porce
10	381	49.0	141	6 Q95J85	Q95J85 monodelphis
11	301	38.7	140	13 Q98773	Q98773 myiopharyng
12	295	38.0	131	13 Q90M63	Q90M63 scyllorhinu
13	295	38.0	142	13 Q90G92	Q90G92 oncorhynch
14	293	37.7	89	6 Q46619	Q46619 equus hemo
15	290	37.3	140	13 Q90G80	Q90G80 ictalurus p
16	288	37.1	89	6 Q46618	Q46618 equus zebra

17	281	36.2	137	13 Q91999	Q91999 acipenser b
18	259	33.3	137	13 Q90M01	Q90M01 xenopus lae
19	259	33.2	137	13 Q90M04	Q90M04 scyllorhinu
20	257	33.1	137	13 Q90M05	Q90M05 scyllorhinu
21	257	33.1	137	13 Q90M06	Q90M06 pagrus majo
22	256	32.9	82	6 Q46622	Q46622 ceratotheri
23	255.5	32.9	80	11 Q63013	Q63013 rattus norv
24	253.5	32.6	145	13 Q90M55	Q90M55 paralichth
25	251	32.3	132	13 Q90G81	Q90G81 ictalurus p
26	248.5	32.0	146	13 Q90M19	Q90M19 hippoglossu
27	247.5	31.9	143	13 Q91996	Q91996 acipenser b
28	244	31.4	128	13 Q91997	Q91997 acipenser b
29	241.5	31.1	145	13 Q90M02	Q90M02 paralichth
30	240	30.9	138	6 Q90M03	Q90M03 paralichth
31	240	30.9	138	6 Q90M04	Q90M04 paralichth
32	239	30.8	109	13 Q91998	Q91998 acipenser b
33	229	29.5	123	13 Q90K91	Q90K91 rana ridibu
34	229	29.5	130	13 Q90M83	Q90M83 carassius a
35	225	29.0	88	13 Q90M07	Q90M07 salmo salar
36	224	28.8	130	13 Q90M72	Q90M72 mylopharyng
37	207	26.6	125	13 Q91992	Q91992 conger cong
38	201	25.9	129	6 Q90M08	Q90M08 monodelphis
39	200.5	25.8	149	13 Q90M09	Q90M09 carassius a
40	200.5	25.8	150	13 Q90M10	Q90M10 carassius a
41	200.5	25.8	150	13 Q90M11	Q90M11 carassius a
42	200.5	25.8	150	13 Q90M12	Q90M12 carassius a
43	199	25.6	147	13 Q90M21	Q90M21 catfish
44	199	25.6	150	13 Q90M21	Q90M21 catfish
45	186.5	24.0	137	13 Q90M21	Q90M21 catfish
46	174	22.4	61	11 Q63012	Q63012 rattus norv
47	172.5	22.2	123	13 Q90M08	Q90M08 salmo salar
48	163	21.0	87	4 Q15962	Q15962 homo sapien
49	145	18.7	120	13 Q91120	Q91120 morone saxa
50	144	18.5	120	13 Q90V00	Q90V00 paralichth

ALIGNMENTS

RESULT 1

Q9BEH1 ID Q9BEH1 PRELIMINARY: PRT: 165 AA.
AC Q9BEH1
DT 01-JUN-2001 (TRENBLrel. 17, Created)
DT 01-JUN-2001 (TRENBLrel. 17, Last sequence update)
DE 01-DEC-2001 (TRENBLrel. 19, Last annotation update)
DE CHORIONIC GONADOTROPIN BETA SUBUNIT 2.
OS Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey)
OC Mammalia: Eutheria: Primates: Catarrhini: Cercopithecoidea: Cercopithecoidea: Macaca.
OX NCBI_TaxID=9541.
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-EMBRYONIC TROPHOBLAST;
RA Wilken J.A., Matsumoto K., Lasley B.L., Bedows E.;
RT "A Comparison of Chorionic Gonadotropin Expression by Human and Macaque Trophoblast Cells";
HL EMBL: AY026360; AK08644.1;
DR EMBL: AY026360; AK08644.1;
DR InterPro: IPR000359; Cys knot.
DR Pfam: PF00007; Cys knot; 1.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN_1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
SQ SEQUENCE 165 AA; 17743 MW; 2F21566B48592471 CRC64;

Query Match 81.2%; Score 631; DB 6; Length 165;
Best Local Similarity 82.7%; Pred. No. 2.4e-62;
Matches 115; Conservative 7; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 61
 DB 21 SREPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 80
 QY 62 DVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 121
 DB 81 EVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 140
 QY 122 SKAPPSLPSPRLPGSD 140
 DB 141 SKDPPSPSPSLLEPAD 159

RESULT 2
 ID Q98H2 PRELIMINARY; PRT: 165 AA.
 AC Q98H2: 2001 (TrEMBLrel. 17, Created)
 DT 01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
 DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
 DE CHORIONIC GONADOTROPIN BETA SUBUNIT 1.
 OS Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
 OC Cercopithecoidea; Macaca.
 RX NCBI_TaxID=9541;
 RP SEQUENCE FROM N.A.
 RA Wilken J.A., Matsumoto K., Lastley B.L., Bedows E.;
 RT "A Comparison of Chorionic Gonadotropin Expression by Human and
 Macaque Trophoblast Cells."
 RL Submitted (JAN-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AY026359; AAK08643.1; -;
 DR HSP: P01233; 1XUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR01345; Glyco_hormone_beta.
 DR Pfam: PF00068; GHF; 1.
 DR SMART: SM00068; GHF; 1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN_1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 SQ SEQUENCE 165 AA; 17711 MW; 280DF602157D9940 CRC64;

Query Match 80.6%; Score 626; DB 6; Length 165;
 Best Local Similarity 81.4%; Pred. NO. 8.3e-62;
 Matches 114; Conservative 8; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 61
 DB 21 SREPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 80
 QY 62 DVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 121
 DB 81 EVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 140
 QY 122 SKAPPSLPSPRLPGSD 141
 DB 141 SKDPPSPSPSLLEPAD 160

RESULT 3
 ID Q9GL37 PRELIMINARY; PRT: 165 AA.
 AC Q9GL37:
 DT 01-MAR-2001 (TrEMBLrel. 16, Created)
 DT 01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
 DE CHORIONIC GONADOTROPIN BETA SUBUNIT.
 OS Macaca mulatta (Rhesus macaque), and
 OC Cercopithecoidea (Old World Monkey);
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
 OC Cercopithecoidea; Macaca.

OK NCBI_TaxID=9544, 9886;
 RN [1]
 RC SEQUENCE FROM N.A.
 RC SPECIES=Macaca mulatta;
 RA Chen Y., Peng J.-P., Wang B.;
 RT "Identification of beta subunit of the rhesus monkey chorionic
 gonadotropin (rCG)."
 RL Submitted (NOV-2000) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AY011015; AAK52504.1; -;
 DR HSP: P01233; 1XUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.
 DR Pfam: PF00007; Cys_knot; 1.
 DR SMART: SM00068; GHF; 1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN_1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 SQ SEQUENCE 165 AA; 17680 MW; 3E72406F1813BA69 CRC64;

Query Match 79.3%; Score 616; DB 6; Length 165;
 Best Local Similarity 82.0%; Pred. NO. 1.1e-60;
 Matches 114; Conservative 7; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 61
 DB 21 SREPLRCPRIATLAKEGCPVCIITNTTICAGCTPTMTVRLQGLVLPALPOVVCNR 80
 QY 62 DVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 121
 DB 81 EVRFESIRLPGCPGVNVPVYVALSCALCRSTTDCGGPKDHPILTCDDPRQSSS 140
 QY 122 SKAPPSLPSPRLPGSD 140
 DB 141 SKDPPSPSPSLLEPAD 159

RESULT 4
 ID Q99F48 PRELIMINARY; PRT: 165 AA.
 AC Q99F48: 2001 (TrEMBLrel. 17, Created)
 DT 01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
 DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
 DE CHORIONIC GONADOTROPIN BETA SUBUNIT GLYCOPROTEIN.
 OS Mus musculus (Mouse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
 RX NCBI_TaxID=10090;
 RP SEQUENCE FROM N.A.
 RA Chen Y., Peng J.-P.;
 RT "Identification of beta subunit glycoprotein (rCGb) using DNA immunization."
 RL Submitted (JAN-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AF333067; AAK09432.1; -;
 DR HSP: P01233; 1XUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.
 DR Pfam: PF00007; Cys_knot; 1.
 DR SMART: SM00068; GHF; 1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN_1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 SQ SEQUENCE 165 AA; 17680 MW; 3E72406F1813BA69 CRC64;

Query Match 79.3%; Score 616; DB 11; Length 165;

QY 62 DVRFESIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 114
 DB 67 ELRFASIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 119

RESULT 8
 Q924A7 PRELIMINARY; PRT: 135 AA.
 ID Q924A7
 AC~ Q924A7
 DT 01-DEC-2001 (TREMELREL. 19, Created)
 DT 01-DEC-2001 (TREMELREL. 19, Last sequence update)
 DE LUTEINIZING HORMONE BETA SUBUNIT PRECURSOR (FRAGMENT).
 OS Cavia porcellus (Guinea pig).
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 CC Mammalia; Eutheria; Rodentia; Hystricognathi; Caviidae; Cavia.
 OX NCBI_TaxID=10141;
 RN 111
 RP SEQUENCE FROM N.A.
 RX MEDLINE=21255925; PubMed=11357063;
 RA Sherman G.B., Heilman D.F., Hoss A.J., Bunick D., Lund L.A.;
 RT "Messenger RNAs encoding the beta subunits of guinea pig (Cavia
 RT porcellus) luteinizing hormone (gplh) and putative chorionic
 RT gonadotropin (gpch) are transcribed from a single-copy gplh/cobeta
 RT gene.";
 RL J. Mol. Endocrinol. 26:267-280(2001).
 DB EMBL: AF355775; AAK84305.1; -;
 KW Signal
 KN NON_TER 1 1
 FT SIGNAL <1 14 POTENTIAL.
 FT CHAIN 15 135 LUTEINIZING HORMONE BETA SUBUNIT.
 SQ SEQUENCE 135 AA: 14432 MW: A44C63DBDC5607AE CRC64;

Query Match 51.5%; Score 400; DB 11; Length 135;
 Best Local Similarity 61.9%; Pred. No. 8.4e-37;
 Matches 70; Conservative 14; Mismatches 29; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAVKEGCPVITVTTICAGCPTMTVLGVLPALPQVNCVR 61
 DB 15 SRGLRPTCRPIATLAAKEACPCVITVTTICAGCPTMTVLGVLPALPQVNCVR 74

QY 62 DVRFESIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 114
 DB 67 ELRFASIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 119

RESULT 9
 Q924A8 PRELIMINARY; PRT: 141 AA.
 ID Q924A8
 AC~ Q924A8
 DT 01-DEC-2001 (TREMELREL. 19, Created)
 DT 01-DEC-2001 (TREMELREL. 19, Last sequence update)
 DE PUTATIVE LUTEINIZING HORMONE BETA SUBUNIT PRECURSOR.
 GN LHBETA.
 OS Cavia porcellus (Guinea pig).
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 CC Mammalia; Eutheria; Rodentia; Hystricognathi; Caviidae; Cavia.
 OX NCBI_TaxID=10141;
 RN 111
 RP SEQUENCE FROM N.A.
 RX MEDLINE=21255925; PubMed=11357063;
 RA Sherman G.B., Heilman D.F., Hoss A.J., Bunick D., Lund L.A.;
 RT "Messenger RNAs encoding the beta subunits of guinea pig (Cavia
 RT porcellus) luteinizing hormone (gplh) and putative chorionic
 RT gonadotropin (gpch) are transcribed from a single-copy gplh/cobeta
 RT gene.";
 RL J. Mol. Endocrinol. 26:267-280(2001).
 DB EMBL: AF355775; AAK84305.1; -;
 KW Signal
 KN NON_TER 1 20 POTENTIAL.
 FT SIGNAL 1 20
 FT CHAIN 21 141 PUTATIVE LUTEINIZING HORMONE BETA

FT SEQUENCE 141 AA: 15122 MW: 690EDF3CA555A6A3 CRC64;
 SUBUNIT.
 Query Match 51.5%; Score 400; DB 11; Length 141;
 Best Local Similarity 61.9%; Pred. No. 8.4e-37;
 Matches 70; Conservative 14; Mismatches 29; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAVKEGCPVITVTTICAGCPTMTVLGVLPALPQVNCVR 61
 DB 21 SRGLRPTCRPIATLAAKEACPCVITVTTICAGCPTMTVLGVLPALPQVNCVR 80

QY 62 DVRFESIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 114
 DB 81 ELRFASIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 133

RESULT 10
 Q95J88 PRELIMINARY; PRT: 141 AA.
 ID Q95J88
 AC~ Q95J88
 DT 01-DEC-2001 (TREMELREL. 19, Created)
 DT 01-DEC-2001 (TREMELREL. 19, Last sequence update)
 DE LUTEINIZING HORMONE BETA CHAIN.
 OS Monodelphis domestica (Short-tailed grey opossum).
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 CC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
 OX NCBI_TaxID=13616;
 RN 111
 RP SEQUENCE FROM N.A.
 RX Kacsoh B.;
 RT "Cloning of a cDNA encoding the luteinizing hormone beta chain
 RT precursor in the marsupial, Monodelphis domestica.";
 RL Submitted (SEP-2001) to the EMBL/GenBank/DBJ databases.
 DB EMBL: AK056475; AAU13337.1; -;
 SQ SEQUENCE 141 AA: 15031 MW: 5A59E5E4D1E9285 CRC64;

Query Match 49.0%; Score 381; DB 6; Length 141;
 Best Local Similarity 61.1%; Pred. No. 1.1e-34;
 Matches 66; Conservative 11; Mismatches 31; Indels 0; Gaps 0;

QY 7 RPRCRPIATLAVKEGCPVITVTTICAGCPTMTVLGVLPALPQVNCVR 66
 DB 27 RPLCRPTNATLAESDACPCVITVTTICAGCPTMTVLGVLPALPQVNCVR 86

QY 67 SIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 114
 DB 87 WIRLPCGPGVNVVSVAVALSQCACLRSTTDCGGPKDHPVLTCDP 134

RESULT 11
 Q98TY3 PRELIMINARY; PRT: 140 AA.
 ID Q98TY3
 AC~ Q98TY3
 DT 01-JUN-2001 (TREMELREL. 17, Created)
 DT 01-JUN-2001 (TREMELREL. 17, Last sequence update)
 DE LUTEINIZING HORMONE BETA SUBUNIT.
 OS Myiopharyngodon plicatus.
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 CC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
 CC Cyprinidae; Myiopharyngodon.
 OX NCBI_TaxID=75356;
 RN 111
 RP SEQUENCE FROM N.A.
 RX Beyer-Elzenberg D., Rosenfeld H., Zmora N., Yaron Z., Ellzur A.;
 RT "Isolation and characterization of the black carp LH beta subunit.";
 RL Submitted (NOV-2000) to the EMBL/GenBank/DBJ databases.
 DB EMBL: AF319960; AAK07414.1; -;
 DR HSSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_Knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.

```

DR PFAM: PF00007, Cys_knot; 1.
DR SMART: SMO0069, GHR; 1.
DR PROSITE: PS00261, GLYCO-HORMONE BETA_1; UNKNOWN_1.
DR PROSITE: PS00689, GLYCO-HORMONE BETA_2; 1.
DR SQ SEQUENCE 140 AA; 15820 MW; 871273F35DA010 CRC64;

Query Match          38.7%; Score 301; DB 13; Length 140;
Best Local Similarity 54.3%; Pred. No. 8.5e-26;
Matches 51; Conservative 15; Mismatches 28; Indels 0; Gaps 0;

QY      8 PRCPINATLVAKEGCGPCTIVNTICAGCPTMTVRVLOGVLPAQPVCNRYDRE 67
DB      19 LUTEINIZING HORMONE BETA SUBUNIT PRECONSOR.
        :|||:|||:::|||||:::|||||:::|||||:::|||||:::|||||:::
DB      27 PCEPNVTAVETAVEKGGPKCLVPLTTCISGRCLTKPEVPKSPSTVGWCTYREDVAYET 86
QY      66 TIRLPCCPGNPVWSYAVALSCQALCRRTSDTC 101
DB      87 VRLPDCPPGVDPDHITTPYVALSCDSUCSTMTSDS 120

RESULT 12
Q90M63 PRELIMINARY; PRT; 131 AA.
AC ID Q90M63
AC AC Q90M63:
DT 01-DEC-2001 (TEMBRel. 19, Created)
DT 01-DEC-2001 (TEMBRel. 19, Last sequence update)
DT 01-DEC-2001 (TEMBRel. 19, Last annotation update)
GN LH BETA INIZING HORMONE BETA SUBUNIT PRECONSOR.
OS Scyllorhinus canicula (Spotted dogfish). [Spotted catshark].
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Chondrichthyes;
OC Elasmobranchii; Galeomorphii; Galeoidae; Carchariaformes;
OC Scyliorhinidae; Scyllorhinus.
OC NCBI_TaxId=7830;
OX |||
RP SEQUENCE FROM N.A.
RN CHAIN 1
RS SIGNAL 1 19 POTENTIAL.
RT DUALITY OF gonadotropins in gnathostomes. *
RL Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
RL ENBL; AJ310345; CAC43236.1; -
RW SIGNAL 1 19 POTENTIAL.
FW CHAIN 20 131 LUTEINIZING HORMONE BETA SUBUNIT.
FT SEQUENCE 131 AA; 14656 MW; 3DF8592C6A6AF77 CRC64;

Query Match          38.0%; Score 295; DB 13; Length 131;
Best Local Similarity 50.5%; Pred. No. 3.7e-25;
Matches 48; Conservative 19; Mismatches 28; Indels 0; Gaps 0;

QY      7 RPRCPINATLVAKEGCGPCTIVNTICAGCPTMTVRVLOGVLPAQPVCNRYDRE 66
DB      20 RHCHPNTWTNAEKDEPCILVTIISCGGYCKESYKSPLLSYQHWCTYKEIRYE 79
QY      67 SIRLPCCPGNPVWSYAVALSCQALCRRTSDTC 101
DB      87 VRLPDCPPGVDPDHITTPYVALSCDSUCSTMTSDS 120

RESULT 13
Q9DG92 PRELIMINARY; PRT; 142 AA.
AC ID Q9DG92
AC AC Q9DG92:
DT 01-MAR-2001 (TEMBRel. 16, Created)
DT 01-MAR-2001 (TEMBRel. 16, Last sequence update)
DT 01-DEC-2001 (TEMBRel. 19, Last annotation update)
GN LH BETA INIZING HORMONE BETA SUBUNIT.
OS Scyllorhinus mykiss (Rainbow trout) (Salmo gairdneri).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OC NCBI_TaxId=8022;
OX |||
RN CHAIN 1
RS SIGNAL 1 19 POTENTIAL.
RT DUALITY OF gonadotropins in gnathostomes. *
RL Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
RL ENBL; AJ310345; CAC43236.1; -
RW SIGNAL 1 19 POTENTIAL.
FW CHAIN 20 131 LUTEINIZING HORMONE BETA SUBUNIT.
FT SEQUENCE 131 AA; 14656 MW; 3DF8592C6A6AF77 CRC64;

Query Match          38.0%; Score 295; DB 13; Length 131;
Best Local Similarity 50.5%; Pred. No. 3.7e-25;
Matches 48; Conservative 19; Mismatches 28; Indels 0; Gaps 0;

QY      7 RPRCPINATLVAKEGCGPCTIVNTICAGCPTMTVRVLOGVLPAQPVCNRYDRE 66
DB      20 RHCHPNTWTNAEKDEPCILVTIISCGGYCKESYKSPLLSYQHWCTYKEIRYE 79
QY      67 SIRLPCCPGNPVWSYAVALSCQALCRRTSDTC 101
DB      87 VRLPDCPPGVDPDHITTPYVALSCDSUCSTMTSDS 120

RESULT 13
Q9DG92 PRELIMINARY; PRT; 142 AA.
AC ID Q9DG92
AC AC Q9DG92:
DT 01-MAR-2001 (TEMBRel. 16, Created)
DT 01-MAR-2001 (TEMBRel. 16, Last sequence update)
DT 01-DEC-2001 (TEMBRel. 19, Last annotation update)
GN LH BETA INIZING HORMONE BETA SUBUNIT.
OS Scyllorhinus mykiss (Rainbow trout) (Salmo gairdneri).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OC NCBI_TaxId=8022;
OX |||
RN CHAIN 1
RS SIGNAL 1 19 POTENTIAL.
RT DUALITY OF gonadotropins in gnathostomes. *
RL Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
RL ENBL; AJ310345; CAC43236.1; -
RW SIGNAL 1 19 POTENTIAL.
FW CHAIN 20 131 LUTEINIZING HORMONE BETA SUBUNIT.
FT SEQUENCE 131 AA; 14656 MW; 3DF8592C6A6AF77 CRC64;

```

```

09DG80
ID O9DG80 PRELIMINARY; PRT: 140 AA.
AC Q9DG80;
DT 01-MAR-2001 (TrEMBLrel. 16, Created)
DT 01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
DE GONADOTROPHIN BETA SUBUNIT
OS Ictalurus punctatus (Channel catfish).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Siluriformes; Ictaluridae; Ictalurus.
OX NCBI_TaxID=7998;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=KANSAS;
RA Liu Z.J., Kim S., Karsi A., Dunham R.;
RT "Channel catfish gonadotropin beta-subunits: cDNA cloning and their
RT expression during embryonic development."
RT Submitted (1999) to the EMBL/GenBank/DBJ databases.
DR EMBL: AF112132; AAC32156.1;
DR HSSP: P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN.1.
SQ SEQUENCE 140 AA; 15787 MW; AAY7CMAVEID2882 CRC64;

Query Match 37.1%; Score 290; DB 13; Length 140;
Best Local Similarity 49.5%; Pred. No. 1.4e-23;
Matches 49; Conservative 19; Mismatches 33; Indels 0; Gaps 0;

OY 1 PSEKLRPRCRINATLAVKESGCVICITVTTICAGYCTMTYVLOGVLPALPQVQNY 60
DB 20 PAGSYLPHCEPVNETVSVEKDCPKLVQTAICSGHCLTKPEYKSPFNIQHVCTY 79
OY 61 RIVRFESIRLPGCGPVNPNVSVYVALSCCALCRRTTDC 101
DB 80 RIVRFETVRLPGCGVDPHTVTPVLSCECTLTCTHDTDC 120

RESULT 16
ID O46618 PRELIMINARY; PRT: 89 AA.
AC O46618;
DT 01-JUN-1998 (TrEMBLrel. 06, Created)
DT 01-JUN-1998 (TrEMBLrel. 06, Last sequence update)
DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
DE LUTEINIZING HORMONE/CHORIONIC GONADOTROPHIN BETA-SUBUNIT
DE (FRAGMENT).
GN LH/CG-BETA.
OS Equus zebra, Hartmannae.
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Equidae; Perissodactyla; Equidae; Equus.
OX NCBI_TaxID=73335;
RN [1]
RP SEQUENCE FROM N.A.
RA Fischer S., Velts J., Meyer H.H.D.;
RT "Nucleotide and amino acid sequence of the beta-LH determinant loop
RT from different Perissodactyls and the estimated impact on the
RT biological activity."
RT Submitted (Feb-1998) to the EMBL/GenBank/DBJ databases.
DR EMBL: AF17071; AAC04360.1;
DR HSSP: P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
DR CHORION.
FT NON_TER 1 89
FT SEQUENCE 89 AA; 9325 MW; 2AD973AC7EAC5C8 CRC64;

```

```

Query Match 37.1%; Score 288; DB 6; Length 89;
Best Local Similarity 62.2%; Pred. No. 1.5e-24;
Matches 56; Conservative 8; Mismatches 22; Indels 4; Gaps 2;

OY 44 RVLQGVLPALPQVQVNVNDRVFESIRLPGCGPVNPNVSVYVALSCCALCRRTTDCG 103
DB 2 RVPAAALPPIQPVCTYRELPAIRLPGCGVDPHTVTPVLSCEGCPCLATIDCG 61
OY 104 PKDHPLTCDDPRFQSSSSKAPPSPSPS 133
DB 62 PRDHPLACAP---QASSSSK-DPPSOPLTS 87

RESULT 17
ID O91999 PRELIMINARY; PRT: 137 AA.
AC O91999;
DT 01-SEP-2000 (TrEMBLrel. 15, Created)
DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
DE LUTEINIZING HORMONE PRECURSOR.
GN LH.
OS Acipenser baerii (Siberian sturgeon).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Chondrostei; Acipenseriformes; Acipenseridae;
OC Acipenserinae; Acipenser.
OX NCBI_TaxID=27689;
RP SEQUENCE FROM N.A.
RC TISSUE=PIUITARY;
RC MEDLINE=20318422; PubMed=10859263;
RA Quarat B., Sellouk A., Salmon C.;
RT "Phylogenetic analysis of the vertebrate glycoprotein hormone family
RT including new sequences of sturgeon (Acipenser baerii) subunits of the
RT two gonadotropins and the thyroid stimulating hormone."
RL Biol. Reprod. 63:222-228(2000).
DR EMBL: AJ251656; CAB91502.1;
DR HSSP: P01233; 000359; Cys_knot.
DR InterPro: IPR000359; Glyco_hormone_beta.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHB; 1.
DR SIGNAL.
KW SIGNAL.
FT CHAIN 1 22 POTENTIAL.
FT SIGNAL 23 137 LUTEINIZING HORMONE.
SQ SEQUENCE 137 AA; 14757 MW; 37CFB0B82955607 CRC64;

Query Match 36.2%; Score 281; DB 13; Length 137;
Best Local Similarity 45.5%; Pred. No. 1.4e-23;
Matches 46; Conservative 21; Mismatches 30; Indels 4; Gaps 1;

OY 10 CIPNATLAVKESGCVICITVTTICAGYCTMTYVLOGVLPALPQVQVNVNDRVFESIR 69
DB 26 CEPVNETISAEKCEPTCLLIQTSILSGSCPTKDPFKSALSTVQQRVCTKDLRFATVY 85
OY 70 LFGCGPVNPNVSVYVALSCCALCRRTTDC---GPRD 106
DB 86 LPDPCPVDPHTVTPVLSCEGCPCLATIDCG 126

RESULT 18
ID O9QWCL PRELIMINARY; PRT: 137 AA.
AC O9QWCL;
DT 01-DEC-2001 (TrEMBLrel. 19, Created)
DT 01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
DE LUTROPIN BETA SUBUNIT.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipiloidea; Pipidae;
OC Xenopodinae; Xenopus.

```

OX NCBI_TaxID=8355;
 RN (1)
 RP SEQUENCE FROM N.A.
 RC TISSUE=PIUITARY;
 RA Medline=2130951; PubMed=1140476;
 RA Hui H. F., Brown D. D.;
 RT "Timing of metamorphosis and the
 RT between the thyroid gland and the pituitary is controlled by type II
 RT lodothyronine deiodinase in Xenopus laevis";
 RL Proc. Natl. Acad. Sci. U.S.A. 98:7348-7353(2001).
 DR EMBL: AF360397; AAK49986.1;
 SO SEQUENCE 137 AA; 15272 MW; 6B215F1200F0E197 CRC64;
 Query Match 33.1%; Score 259; DB 13; Length 137;
 Best Local Similarity 42.1%; Pred. No. 3.8e-21;
 Matches 40; Conservative 23; Mismatches 32; Indels 0; Gaps 0;
 QY 7 RPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTRVLOGVLPALPQVWCVNRDVFRE 66
 Db 21 RLCHPTNATISAEDKDCPCVCTVTTTCTGCTLDVDFKALSSVGNICTYNEIRYD 80
 QY 67 SIRLPCGRGVNWSYAVALSQCACLRSTTDCGGRDHPUTC 101
 Db 81 TIKLPDLCTGDPFFTPVAVSKCKNOCKNDYSDC 115
 RESULT 19
 QY064
 ID QY064 PRELIMINARY; PRT: 121 AA.
 AC QY064;
 DT 01-DEC-2001 (Tremblrel. 19, Created)
 DT 01-DEC-2001 (Tremblrel. 19, Last sequence update)
 DT 01-DEC-2001 (Tremblrel. 19, Last annotation update)
 DE FOLLICLE STIMULATING HORMONE BETA SUBUNIT PRECURSOR
 (FRAGMENT).
 OC SH BETA.
 OC Scyllorhinus canicula (Spotted dogfish) (Spotted catshark).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Chondrichthyes;
 OC Elasmobranchii; Galeomorphii; Galeida; Carcharhiniformes;
 OC Scyllorhinidae; Scyllorhinus.
 OX NCBI_TaxID=7830;
 RN (1)
 RP SEQUENCE FROM N.A.
 RC TISSUE=PIUITARY;
 RA Querat B.;
 RT Quality of gonadotropins in gnathostomes.*;
 RT Submitted (APR-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AJ310344; CAC43235.1;
 SO SEQUENCE 121 AA; 13450 MW; 1C141453C3DCFC82 CRC64;
 Query Match 33.2%; Score 258; DB 13; Length 121;
 Best Local Similarity 44.7%; Pred. No. 4.3e-21;
 Matches 46; Conservative 17; Mismatches 40; Indels 0; Gaps 0;
 QY 9 RCPINATLAVKEGCPVCITVNTTICAGTCPTMTRVLOGVLPALPQVWCVNRDVFRE 68
 Db 6 RCOLTNTIATVEEGCGVNTTICAGTCPTMTRVLOGVLPALPQVWCVNRDVFRE 65
 QY 69 RLPCGRGVNWSYAVALSQCACLRSTTDCGGRDHPUTC 111
 Db 66 TIPNCPANNVPTTYPVAVISCCGCMCTETDXTVSAMEPTHC 108
 RESULT 20
 QY069
 ID QY069 PRELIMINARY; PRT: 138 AA.
 AC QY069;
 DT 01-DEC-2001 (Tremblrel. 19, Created)

DT 01-DEC-2001 (Tremblrel. 19, Last sequence update)
 DT 01-DEC-2001 (Tremblrel. 19, Last annotation update)
 DE LUTEINIZING HORMONE BETA SUBUNIT PRECURSOR.
 OC Rana ridibunda (Laughing frog) (Marsh frog).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Amphibia; Batrachia; Anura; Neobatrachia; Ranioidea; Rana.
 OX NCBI_TaxID=8406;
 RN (1)
 RP SEQUENCE FROM N.A.
 RC TISSUE=PIUITARY;
 RA Querat B.;
 RT Evolution of glycoprotein hormones in gnathostomes.*;
 RT Submitted (MAY-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AJ311355; CAC39252.1;
 SO SEQUENCE 138 AA; 15701 MW; 9C1EB077B34B6CF CRC64;
 Query Match 33.1%; Score 257; DB 13; Length 138;
 Best Local Similarity 41.9%; Pred. No. 6.4e-21;
 Matches 44; Conservative 19; Mismatches 42; Indels 0; Gaps 0;
 QY 7 RPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTRVLOGVLPALPQVWCVNRDVFRE 66
 Db 27 RLHLANATISAEDKDCPCVCTVTTTCTGCTLDVDFKALSSVGNICTYNEIRYD 86
 QY 67 SIRLPCGRGVNWSYAVALSQCACLRSTTDCGGRDHPUTC 111
 Db 87 TIKLPDLCTGDPFFTPVAVSKCKNOCKNDYSDC 131
 RESULT 21
 QY060
 ID QY060 PRELIMINARY; PRT: 146 AA.
 AC QY060;
 DT 01-MAR-2001 (Tremblrel. 16, Created)
 DT 01-MAR-2001 (Tremblrel. 16, Last sequence update)
 DT 01-MAR-2001 (Tremblrel. 16, Last annotation update)
 DE GONADOTROPIN II BETA SUBUNIT PRECURSOR
 (FRAGMENT).
 OC Pagrus major (Red sea bream) (Chrysophrys major).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
 OC Acanthomorpha; Acanthopterygii; Perciformes; Percoidae;
 OC Sparidae; Pagrus.
 OX NCBI_TaxID=143350;
 RN (1)
 RP SEQUENCE FROM N.A.
 RA Medline=20318432; PubMed=10859273;
 RA Gen K., Okuzawa K., Senthikumar B., Tanaka H., Moriyam S.,
 RT "Unique expression of gonadotropin-I and -II subunit genes in male and
 RT female red seabream (pagrus major) during sexual maturation.*;
 RL Biol. Reprod. 63:308-319(2000).
 DR EMBL: AB028213; BAB18564.1;
 DR HSSP: P01233; LXUL.
 DR InterPro: IPR000359; Cys_Knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.
 DR Pfam: PF00007; Cys_Knot.1.
 DR SMART: SM00068; GHS.1.
 DR PROSITE: PS00261; GLYCO_HORMONE_BETA.1; UNKNOWN.1.
 SO SEQUENCE 146 AA; 16320 MW; 1EBF429CF5BEF82 CRC64;
 Query Match 33.1%; Score 257; DB 13; Length 146;
 Best Local Similarity 46.2%; Pred. No. 6.8e-21;
 Matches 48; Conservative 17; Mismatches 37; Indels 2; Gaps 1;
 QY 8 RCPINATLAVKEGCPVCITVNTTICAGTCPTMTRVLOGVLPALPQVWCVNRDVFRE 67
 Db 37 PRCOLNATVLEKEGCPKCHPVETTCISGCHITKDPYMK--TRYVQHVCTYRDHYKT 94

OY 68 IRLPGCGVNVVYAVALSOCALCRSTTDCGKDRPLTC 111
 DB 95 FELPDCPPVDPTVTPVAVSCRGICAMOTSDCTFESLEPNEC 138

RESULT 22
 ID Q46622 PRELIMINARY: PRT: 82 AA.
 AC Q46622:
 DT 01-JUN-1998 (TREMBLrel. 06, Created)
 DT 01-JUN-1998 (TREMBLrel. 06, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE LUTEINIZING HORMONE BETA-SUBUNIT (FRAGMENT).
 GN LH-BETA.
 OS Ceratotherium simum simum.
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Perissodactyla; Rhinocerotidae; Ceratotherium.
 OX NCBI_TaxID=7337;
 RN
 RP SEQUENCE FROM N.A.
 RA Fischer S., Velts J., Meyer H.H.D.;
 RT "Nucleotide and amino acid sequence of the beta-LH determinant loop
 RT from different perissodactyls and the estimated impact on the
 RT biological activity.";
 RL Submitted (Feb-1998) to the EMBL/GenBank/DDAJ databases.
 DR EMBL: AF047607; AAC04365.1;
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.
 DR Pfam: PF00007; Cys_knot; 1.
 DR SMART: SM00689; GHB; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 FT NON_TER 1
 SQ SEQUENCE 82 AA; 8643 MW; 270411BA19B78A37 CRC64;

Query Match 32.94; Score 256; DB 6; Length 82;
 Best Local Similarity 59.54; Pred. No. 4.8e-21;
 Matches 44; Conservative 11; Mismatches 19; Indels 0; Gaps 0;

OY 41 TWTVLQGVLPALPOVYCNVYRVFESIRLPGCGVNVVYAVALSOCALCRSTTD 100
 DB 1 SMVNVMPALPPAPOPVCTYHLEFASIRLPGCGVNVVYAVALSOCALCRSTTD 60

OY 101 CGGKDRPLTCDDP 114
 DB 61 CGGPRAGPLACDRP 74

RESULT 23
 ID Q63013 PRELIMINARY: PRT: 80 AA.
 AC Q63013:
 DT 01-NOV-1996 (TREMBLrel. 01, Created)
 DT 01-NOV-1996 (TREMBLrel. 01, Last sequence update)
 DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
 DE TESTICULAR LUTEINIZING HORMONE BETA SUBUNIT.
 GN TLHB3.
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.
 OX NCBI_TaxID=10116;
 RN
 RP SEQUENCE FROM N.A.
 RA STRAIN-SPRAQUE DAWLEY;
 RC MEDLINE-95283549; PubMed-7763258;
 RA Zhang F.P., Rannikko A., Huhtaniemi I.;
 RT "Isolation and characterization of testis-specific cDNAs for
 RT luteinizing hormone beta-subunit in the rat.";
 RL Biochem. Biophys. Res. Commun. 210:858-863(1995).
 DR EMBL: U25803; AAC52251.1;
 DR HSSP: P01233; IXUL.
 DR InterPro: IPR000359; Cys_knot.
 DR InterPro: IPR001545; Glyco_hormone_beta.

DR Pfam: PF00007; Cys_knot; 1.
 DR SMART: SM00689; GHB; 1.
 DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
 SO SEQUENCE 80 AA; 8515 MW; F9EA66C2FD6FC97D CRC64;

Query Match 32.94; Score 255.5; DB 11; Length 80;
 Best Local Similarity 61.64; Pred. No. 3.3e-21;
 Matches 43; Conservative 11; Mismatches 16; Indels 1; Gaps 1;

OY 42 MYTVLQGVLPALPOVYCNVYRVFESIRLPGCGVNVVYAVALSOCALCRSTTDC 101
 DB 1 MYTVLPAALPPVPPVCTYRE-REASVRLPGCGVNVVYAVALSOCALCRSTTDC 59

OY 102 CGGKDRPLTCDDP 114
 DB 60 GGPRTQPMTCDDP 72

RESULT 24
 ID Q90W55 PRELIMINARY: PRT: 145 AA.
 AC Q90W55:
 DT 01-DEC-2001 (TREMBLrel. 19, Created)
 DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE GONADOTROPIN (GTH-II) BETA SUBUNIT.
 GN Parachanna octoline (Flounder).
 OS Parachanna octoline (Flounder).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
 OC Acanthomorpha; Acanthopterygii; Percomorpha; Pleuronectiformes;
 OC Pleuronectoidae; Paracanthopterygii; Paracanthopterygii; Paracanthopterygii;
 OX NCBI_TaxID=8255;
 RN
 RP SEQUENCE FROM N.A.
 RA TISSUE-PITUITARY; PubMed-11316417;
 RA MEDLINE-2216368; PubMed-11316417;
 RA "cDNA cloning of two gonadotropin beta subunits (GTH-Ibeta and
 RT -Ibeta) and their expression profiles during gametogenesis in the
 RT Japanese flounder (Paralichthys olivaceus).";
 RL Gen. Comp. Endocrinol. 122:117-129(2001).
 DR EMBL: AB042423; BAB47388.1;
 SO SEQUENCE 145 AA; 16295 MW; 8DDCE52EE3E750CC CRC64;

Query Match 32.64; Score 253.5; DB 13; Length 145;
 Best Local Similarity 44.64; Pred. No. 1.6e-20;
 Matches 50; Conservative 18; Mismatches 43; Indels 1; Gaps 1;

OY 8 PCRPINATLAVRECGPCVCTVTCAGYCTMTVRLQGVLPALPOVYCNVYRVFES 67
 DB 34 PTCLLINOTVSLXEGCPKCHVTETTCGSHCKTKDPVAKIPNLNTHQVCTQELTKT 93

OY 68 IRLPGCGVNVVYAVALSOCALCRSTTDCGKDRPLTC-DDPRFOD 118
 DB 94 FELPDCPPVDPTVTPVAVSCRGICAMOTSDCTFESLEPNEC 145

RESULT 25
 ID Q9DC81 PRELIMINARY: PRT: 132 AA.
 AC Q9DC81:
 DT 01-MAR-2001 (TREMBLrel. 16, Created)
 DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE GONADOTROPIN BETA 1 SUBUNIT.
 OS Ictalurus punctatus (Channel catfish).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
 OC Siluriformes; Ictaluridae; Ictalurus.
 OX NCBI_TaxID=7998;
 RN
 RP SEQUENCE FROM N.A.

```

RC STRAIN-KANSAS;
RT R. Karsl A., Dunham R.;
RT "Channel, catfish gonadotropin, beta subunits: cDNA cloning and their
RT expression during ovulation";
RT Submitted (DEC-1998) to the EMBL/GenBank/DBJ databases.
RL EMBL; AF112191; AAC31255.1; --
DR HSP: P01233; 1XUL.
DR InterPro: IPR00359; Cys_Knot.
DR InterPro: IPR00154; Glyco_hormone_beta.
DR SWISS: P00006; Cys_knot; 1.
DR SMART: SM00066; Cys_knot; 1.
DR PROSITE: PS00261; G1GCO_HORMONE_BETA.1; UNKNOWN.1.
SQ SEQUENCE 132 AA; 14560 MW; 9BAEB9D425B54038 CRC64;

Query Match 32.3%; Score 251; DB 13; Length 132;
Best Local Similarity 43.8%; Pred. No. 2.8e-20;
Matches 46; Conservative 15; Mismatches 44; Indels 0; Gaps 0;

OY 7 RPRCRTNATLAVKSGPCVCTITGTCGTCVTFVGLQVLPALPDVGVNEDVREE 66
OY : : : : : : : : : : : : : : : : : : : : : : : : : : : :
DB 22 KARCLTNISITVESDCGSCITVNTACTGLCTQERAYSPVPYFQNTCFNDWTTE 81

OY 67 SIILPGCPGVNPVSYVALSCQALCRSTQCGGPKDPLTLC 111
OY : : : : : : : : : : : : : : : : : : : : : : : : : : : :
DB 82 TIQLPGCPGLVDSSFTYFVALSCGSCQNTETDQGFASQMFQSSC 126

Search completed: October 11, 2002, 11:59:08
Job time : 73 secs

```

GenCore version 5.1.3
Copyright (c) 1993 - 2002 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: October 11, 2002, 17:57:02 ; Search time 31 Seconds
(without alignments)
505.207 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 777

Sequence: 1 PSKEPUPRCPNPATLAVE.....SKAPPSPSPRLPQSDT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 350 summaries

Database : A.Geneseq_032802.*

- 1: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1980.DAT.*
- 2: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1981.DAT.*
- 3: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1982.DAT.*
- 4: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1983.DAT.*
- 5: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1984.DAT.*
- 6: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1985.DAT.*
- 7: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1986.DAT.*
- 8: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1987.DAT.*
- 9: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1988.DAT.*
- 10: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1989.DAT.*
- 11: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1990.DAT.*
- 12: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1991.DAT.*
- 13: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1992.DAT.*
- 14: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1993.DAT.*
- 15: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1994.DAT.*
- 16: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1995.DAT.*
- 17: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1996.DAT.*
- 18: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1997.DAT.*
- 19: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1998.DAT.*
- 20: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1999.DAT.*
- 21: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA2000.DAT.*
- 22: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA2001.DAT.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length DB	ID	Description
1	770	99.1	140	21	Human chorionic go
2	770	99.1	145	20	Human chorionic go
3	770	99.1	145	20	Human chorionic go
4	770	99.1	145	22	Human chorionic go
5	770	99.1	145	22	Human chorionic go
6	770	99.1	145	22	Human chorionic go
7	770	99.1	145	22	Beta-subunit of Hu
8	770	99.1	145	22	Human chorionic go
9	770	99.1	145	22	Beta-human chorion
10	770	99.1	145	22	Beta subunit of hu
11	770	99.1	165	12	Human chorionic go

12	770	99.1	165	20	AAU05748	Human chorionic go
13	770	99.1	165	20	AAU95533	Human chorionic go
14	770	99.1	165	21	AAU15358	Human chorionic go
15	770	99.1	165	22	AAU49896	Human chorionic go
16	770	99.1	203	20	AAU43298	HCG beta subunit-J
17	770	99.1	206	20	AAU43303	HCG beta subunit-J
18	770	99.1	206	20	AAU43304	HCG beta subunit-J
19	770	99.1	212	20	AAU43278	HCG beta subunit-J
20	770	99.1	212	20	AAU43304	HCG beta subunit-J
21	770	99.1	265	22	AAU04602	Single chain gonad
22	770	99.1	265	22	AAU04614	Single chain gonad
23	770	99.1	265	22	AAE04474	Human single chain
24	770	99.1	265	22	AAE04486	Human single chain
25	770	99.1	273	20	AAU43285	HCG beta subunit-J
26	770	99.1	273	20	AAU43292	HCG beta subunit-J
27	767	98.7	165	19	AAU47473	Human chorionic go
28	767	98.7	165	19	AAU47473	Human chorionic go
29	767	98.7	165	19	AAU47473	Human chorionic go
30	766	98.6	145	20	AAU95530	Human chorionic go
31	766	98.6	165	20	AAU95508	Glycoprotein hormo
32	766	98.6	176	21	AAU57315	Human betaHCG/beta
33	766	98.6	252	21	AAU57316	Alpha-mating facto
34	765	98.5	145	12	AAU15171	HCG methionine sub
35	765	98.5	145	12	AAU15171	HCG histidine subs
36	765	98.5	165	20	AAU95514	Glycoprotein hormo
37	765	98.5	165	20	AAU95507	Glycoprotein hormo
38	765	98.5	165	20	AAU95509	Glycoprotein hormo
39	764	98.3	145	14	AAU04999	Human chorionic go
40	764	98.3	145	14	AAU04999	Human chorionic go
41	764	98.3	145	14	AAU04999	Human chorionic go
42	764	98.3	165	20	AAU95512	Glycoprotein hormo
43	764	98.3	165	20	AAU95506	Glycoprotein hormo
44	764	98.3	165	20	AAU95510	Glycoprotein hormo
45	764	98.3	165	20	AAU95511	Glycoprotein hormo
46	764	98.3	181	22	AAU04613	Gonadotropin analo
47	764	98.3	181	22	AAU04613	Gonadotropin analo
48	764	98.3	181	22	AAU04613	Gonadotropin analo
49	763	98.2	145	12	AAU15174	HCG histidine subs
50	762	98.1	145	12	AAU15174	HCG histidine subs
51	762	98.1	165	20	AAU95513	Glycoprotein hormo
52	762	98.1	165	20	AAU95515	Glycoprotein hormo
53	761	97.9	165	20	AAU95534	HCG-beta analogue
54	761	97.9	165	20	AAU95538	HCG-beta analogue
55	761	97.9	265	16	AAU86247	Partially deglycos
56	761	97.9	265	16	AAU86247	Partially deglycos
57	759	97.7	144	12	AAU15178	HCG histidine subs
58	759	97.7	145	12	AAU15103	HCG/hLH chimera, D
59	759	97.7	145	12	AAU15120	HCG/hLH chimera, A
60	759	97.7	145	12	AAU15120	HCG/hLH chimera, A
61	759	97.7	145	12	AAU15120	HCG/hLH chimera, A
62	757	97.4	145	18	AAU27682	HCG-beta analogue
63	757	97.4	145	18	AAU27682	HCG-beta analogue
64	756	97.3	145	12	AAU15117	HCG histidine subs
65	756	97.3	145	12	AAU15177	HCG histidine subs
66	755	97.2	145	18	AAU27687	Chorionic gonadotr
67	755	97.2	181	16	AAU86258	Human CG beta-subu
68	754	97.0	145	12	AAU15065	HCG/hFSH chimera, E
69	754	97.0	145	12	AAU15110	HCG/hLH chimera, E
70	754	97.0	145	18	AAU27686	Chorionic gonadotr
71	753	96.9	145	18	AAU27681	Chorionic gonadotr
72	752	96.8	165	20	AAU95541	HCG-beta analogue
73	750	96.3	145	12	AAU15112	HCG/hLH chimera, E
74	749	96.4	145	12	AAU15112	HCG/hLH chimera, E
75	749	96.4	145	12	AAU15118	HCG/hLH chimera, A
76	749	96.4	204	20	AAU43270	Human CG beta subu
77	749	96.4	204	20	AAU43270	Human CG beta subu
78	749	96.4	208	20	AAU43306	Human CG alpha sub
79	748	96.3	145	12	AAU15114	HCG/hLH chimera, A
80	748	96.3	145	12	AAU15114	HCG/hLH chimera, A
81	748	96.3	145	18	AAU27679	Chorionic gonadotr
82	747	96.1	145	12	AAU15115	HCG/hLH chimera, A
83	746	96.0	145	12	AAU15068	HCG/hFSH chimera, D
84	746	96.0	145	12	AAU15101	HCG/hLH chimera, D

85	746	96.0	145	12	AAR15176	hcg histidine subs
86	746	96.0	145	22	AAR48385	Human chorionic go
87	745	95.9	145	12	AAR15100	hcg/bHh chimera, D
88	745	95.9	145	12	AAR15098	hcg/bHh chimera, D
89	744	95.8	145	18	AAR27678	Chorionic gonadotr
90	743	95.6	145	12	AAR15102	hcg/bHh chimera, D
91	743	95.6	145	12	AAR15095	hcg/bHh chimera, D
92	743	95.6	145	12	AAR15095	hcg/bHh chimera, D
93	743	95.6	263	22	AAR04518	hcg/bHh chimera, D
94	741	95.4	145	12	AAR15063	hcg/hfsh chimera, A
95	741	95.4	145	21	AAR74779	Human CG beta subu
96	740	95.2	204	20	AY43275	Human CG beta subu
97	740	95.2	307	18	AAR33358	TBP(20-161)/hcg-be
98	739	95.1	336	18	AAR33360	TBP(20-190)/hcg-be
99	739	95.1	145	12	AAR15097	hcg/bHh chimera, D
100	738	95.0	145	12	AAR15066	hcg/hfsh chimera, A
101	738	95.0	145	12	AAR15089	hcg/hfsh chimera, A
102	738	95.0	145	12	AAR15089	hcg/hfsh chimera, A
103	736	94.7	145	12	AAR15082	hcg/hfsh chimera, A
104	736	94.7	145	18	AAR27683	Chorionic gonadotr
105	735	94.6	145	12	AAR15116	hcg/bHh chimera, A
106	735	94.6	145	12	AAR15109	hcg/bHh chimera, A
107	734	94.5	265	16	AAR86269	Single chain gonad
108	732	94.2	141	12	AAR15168	hcg deletion mutan
109	732	94.2	145	12	AAR15125	hcg/bHh chimera, A
110	732	94.2	145	12	AAR15092	hcg deletion mutan
111	731	94.1	133	12	AAR15184	hcg/bHh chimera, A
112	731	94.1	133	12	AAR15184	hcg/bHh chimera, A
113	730	94.0	145	12	AAR15099	Chorionic gonadotr
114	730	94.0	145	18	AAR27680	hcg deletion mutan
115	728	93.7	137	12	AAR15165	hcg deletion mutan
116	728	93.7	145	12	AAR15111	hcg/bHh chimera, E
117	728	93.7	158	20	AY43266	Human chorionic go
118	727	93.6	139	12	AAR15167	hcg deletion mutan
119	726	93.4	145	12	AAR15104	hcg/bHh chimera, D
120	725	93.3	145	12	AAR15074	hcg/hfsh chimera, A
121	718	92.4	145	12	AAR15064	hcg/hfsh chimera, A
122	718	92.4	145	12	AAR15122	hcg/hfsh chimera, A
123	715	92.1	145	12	AAR15067	hcg/bHh chimera, A
124	715	92.1	145	12	AAR15067	hcg/bHh chimera, A
125	713	91.8	145	12	AAR15124	hcg/hfsh chimera, A
126	708	91.1	145	12	AAR15080	hcg/hfsh chimera, A
127	703	90.5	209	20	AY43300	hcg/hfsh chimera, A
128	700	90.1	139	12	AAR15061	hcg/hfsh chimera, A
129	699	90.0	145	12	AAR15094	hcg/hfsh chimera, A
130	694	89.3	138	12	AAR15088	hcg/hfsh chimera, E
131	694	89.3	145	12	AAR15113	hcg/bHh chimera, D
132	689	88.7	145	12	AAR15084	hcg/hfsh chimera, A
133	687.5	88.5	132	12	AAR95449	hcg/hfsh chimera, A
134	687.5	88.5	132	12	AAR95449	hcg/hfsh chimera, A
135	675	86.2	135	12	AAR15093	hcg deletion mutan
136	675	86.2	135	12	AAR15093	hcg deletion mutan
137	674	86.7	145	12	AAR15075	hcg/hfsh chimera, A
138	671	86.4	165	20	AAW95359	hcg/hfsh chimera, A
139	666.5	85.8	128	12	AAR15166	hcg deletion mutan
140	666	85.7	165	20	AAW95356	hcg/hfsh chimera, A
141	659	84.8	145	12	AAR15072	hcg/hfsh chimera, A
142	654	84.2	142	12	AAR15076	hcg/hfsh chimera, A
143	653	84.0	145	12	AAR15076	hcg/hfsh chimera, A
144	648	83.4	234	22	AAR04475	hcg deletion mutan
145	648	83.4	234	22	AAR04475	hcg deletion mutan
146	644	82.9	116	12	AAR15162	hcg/hfsh chimera, A
147	640	82.4	212	20	AY43282	hcg/hfsh chimera, A
148	640	82.4	273	20	AY43286	hcg/hfsh chimera, A
149	640	82.4	273	20	AY43296	hcg/hfsh chimera, A
150	639	82.2	234	16	AAR86248	Single chain gonad
151	638	82.1	145	12	AAR15073	hcg/hfsh chimera, A
152	634	81.6	234	22	AAE04509	Human single chain
153	633	81.5	114	22	AAE04620	Human chorionic go
154	633	81.5	114	22	AAE04620	Human chorionic go
155	631	81.2	212	20	AY43283	hcg/hfsh chimera, A
156	631	81.2	212	20	AY43283	hcg/hfsh chimera, A
157	631	81.2	273	20	AY43297	hcg/hfsh chimera, A
158	629	81.0	158	12	AAR15172	hcg methionine sub
159	625	80.4	234	16	AAR86260	Partially deglycos
160	623	80.2	165	20	AAW95528	Glycoprotein hormo
161	621	79.9	234	22	AAE04519	Human single chain
162	618	79.5	122	12	AAR15119	hcg/hfsh chimera, A
163	618	79.5	124	12	AAR15095	hcg/hfsh chimera, A
164	615	79.2	111	12	AAR15161	hcg deletion mutan
165	612	78.9	135	16	AAR86260	Single chain gonad
166	607	77.9	135	16	AAR86260	Single chain gonad
167	591.5	76.1	122	12	AAR15108	hcg/bHh chimera, D
168	589	75.8	122	12	AAR15123	hcg/bHh chimera, A
169	586	75.4	115	12	AAR15081	hcg/hfsh chimera, A
170	582	74.9	234	22	AAU04609	Single chain gonad
171	582	74.9	234	22	AAE04481	Human single chain
172	573	73.7	115	12	AAR15083	hcg/hfsh chimera, A
173	573	73.7	234	16	AAR86254	Single chain gonad
174	569	73.2	114	14	AAR31005	Modified hcg beta-
175	568	73.2	114	14	AAR86252	Modified hcg beta-
176	561	72.2	114	14	AAR86252	Modified hcg beta-
177	561	72.2	114	14	AAR86252	Modified hcg beta-
178	561	72.2	114	14	AAR86252	Modified hcg beta-
179	559	71.9	234	16	AAR86266	Partially deglycos
180	559	71.9	234	16	AAR86249	Single chain gonad
181	559	71.9	234	22	AAU04604	Single chain gonad
182	559	71.9	234	22	AAE04476	Human single chain
183	556.5	71.6	122	12	AAR15107	hcg/bHh chimera, D
184	555	71.4	181	20	AAV43279	hcg/bHh chimera, D
185	552	71.4	234	22	AAE04525	hcg/bHh chimera, D
186	552	71.4	234	22	AAE04525	hcg/bHh chimera, D
187	552	71.4	242	20	AAV43293	hcg/bHh chimera, D
188	553	71.2	118	12	AAR15070	hcg/hfsh chimera, A
189	553	71.2	234	22	AAU04608	Single chain gonad
190	553	71.2	234	22	AAE04480	Human single chain
191	552	71.0	234	16	AAR86261	Partially deglycos
192	552	71.0	234	22	AAE04510	Human single chain
193	549.5	70.7	122	12	AAR15105	hcg/bHh chimera, D
194	549	70.7	237	22	AAU04607	Single chain gonad
195	549	70.7	237	22	AAE04479	Human single chain
196	546	70.3	134	16	AAR86276	Single chain gonad
197	544	70.0	112	22	AAU04621	Human single chain
198	544	70.0	112	22	AAU04621	Human single chain
199	544	70.0	121	21	AAV92001	Human lutalinizing
200	544	70.0	141	7	AAV92001	Sequence of human
201	544	70.0	141	7	AAV92001	hHh-beta analogue
202	544	70.0	141	20	AAW95548	Glycoprotein hormo
203	544	70.0	141	20	AAW95523	Human lutalinizing
204	544	70.0	234	16	AAR86253	Single chain gonad
205	543	69.9	114	22	AAE04494	Human lutalinizing
206	542	69.8	141	20	AAW95521	Glycoprotein hormo
207	540	69.5	117	14	AAR31007	Modified hcg beta-
208	540	69.5	117	14	AAR31007	Modified hcg beta-
209	540	69.5	141	20	AAW95519	hcg analogue hcg be
210	540	69.5	141	20	AAW95519	hcg analogue hcg be
211	539	69.4	237	16	AAR86252	Single chain gonad
212	539	69.4	141	20	AAW95520	Glycoprotein hormo
213	539	69.4	141	20	AAW95516	Glycoprotein hormo
214	539	69.4	141	20	AAW95516	Glycoprotein hormo
215	539	69.4	234	16	AAR86271	Single chain gonad
216	539	69.4	234	22	AAE04540	Human single chain
217	538	69.2	141	20	AAW95522	Glycoprotein hormo
218	536	69.0	141	20	AAW95522	Glycoprotein hormo
219	536	69.0	141	20	AAW95522	Glycoprotein hormo
220	536	69.0	141	20	AAW95525	Glycoprotein hormo
221	535	68.9	141	20	AAW95525	hHh-beta analogue
222	535	68.9	141	20	AAW95525	hHh-beta analogue
223	532	68.5	115	12	AAR15078	hcg/hfsh chimera, A
224	532	68.5	118	12	AAR15071	hcg/hfsh chimera, A
225	530	68.2	237	16	AAR86265	Partially deglycos
226	528	68.0	237	16	AAR86251	Single chain gonad
227	528	68.0	237	22	AAE04478	Human single chain
228	528	68.0	237	22	AAE04478	Human single chain
229	526	67.7	237	22	AAE04524	Partially deglycos
230	526	67.7	237	22	AAE04524	Partially deglycos

N-glycosylation site; follicle stimulating hormone; luteinising hormone; thyroid stimulating hormone; in vitro fertilisation; fertility; mutation; beta subunit; glycoprotein.

Homo sapiens.	
Key	Location/Qualifiers
Misc-difference 64	
/note=	*wild-type phe at this position can be mutated to Asn to introduce a new N-glycosylation site; see claim 3*
Misc-difference 79	
/note=	*wild-type val at this position can be mutated to Asn to introduce a new N-glycosylation site; see claim 3*

US5864488-A.

26-JAN-1999

24-FEB-1995. 05PTS-0305238

24-FEB-1994. 94CB-0003600

MOSSWICK AIRFIELD (LIND)

[illegible]

WDR: 1000-121522/11

[illegible]

and computer-assisted re-design of the chemical structure - used for

Production of gonadotropin releasing analogues

examples, fig 2, vpp, english.

The invention relates to determining whether an analogue of human chorionic gonadotropin (hCG) will have an altered three-dimensional (3D)

structure as compared to hCG. Analogues of hCG and other glycoprotein hormones are produced by inputting chemical changes to the 3D structure

Into a computer loaded with 3D molecular simulation software and representing visually on a computer display. On inputting into the data

Input of the computer at least one operator change in chemical structure of the hcg molecule, the molecular simulation software produces a

modified 3D molecular representation of the analogue structure. The 3D representation of the analogue can be displayed on the virtual display.

whereby changes in 3D structure of the hCG molecule consequent on changes in chemical structure can be visually determined. Concentration calibration

with additional glycosylation sites, and analogues with non-essential

to obtain analogues of hCG, follicle stimulating hormone, luteinising

antagonists. The analogues can be used as growth factors in mammals, for

in vitro fertilisation techniques and IVF treatment in vivo to enhance fertility.. The present sequence represents the beta subunit of hCG.

N-glycosylation sites can be introduced by single point mutations at specified positions to produce hCG analogues.

Sequence 145 AA;

Query Match 99.1%: Score 770: DB 20: Length 145:

Best Local Similarity 100.0%; pred. No. 1.8e-62;
Matches 140: Conservative 0: Mismatches 0:
Indels 0: Cans 0:

2 SKRPIBBBCBBINATI AVEFECCOVCIETVNTT ICACVCDTMTBVLQVU DMY DQV/CNVP 61

[illegible][illegible][illegible]

04 0416 0417 0418 0419 0420 0421 0422 0423 0424 0425 0426 0427 0428 0429 0430 0431 0432 0433 0434 0435 0436 0437 0438 0439 0440 0441 0442 0443 0444 0445 0446 0447 0448 0449 0450 0451 0452 0453 0454 0455 0456 0457 0458 0459 0460 0461 0462 0463 0464 0465 0466 0467 0468 0469 0470 0471 0472 0473 0474 0475 0476 0477 0478 0479 0480 0481 0482 0483 0484 0485 0486 0487 0488 0489 0490 0491 0492 0493 0494 0495 0496 0497 0498 0499 0500 0501 0502 0503 0504 0505 0506 0507 0508 0509 0510 0511 0512 0513 0514 0515 0516 0517 0518 0519 0520 0521 0522 0523 0524 0525 0526 0527 0528 0529 0530 0531 0532 0533 0534 0535 0536 0537 0538 0539 0540 0541 0542 0543 0544 0545 0546 0547 0548 0549 0550 0551 0552 0553 0554 0555 0556 0557 0558 0559 0560 0561 0562 0563 0564 0565 0566 0567 0568 0569 0570 0571 0572 0573 0574 0575 0576 0577 0578 0579 0580 0581 0582 0583 0584 0585 0586 0587 0588 0589 0590 0591 0592 0593 0594 0595 0596 0597 0598 0599 0600 0601 0602 0603 0604 0605 0606 0607 0608 0609 0610 0611 0612 0613 0614 0615 0616 0617 0618 0619 0620 0621 0622 0623 0624 0625 0626 0627 0628 0629 0630 0631 0632 0633 0634 0635 0636 0637 0638 0639 0640 0641 0642 0643 0644 0645 0646 0647 0648 0649 0650 0651 0652 0653 0654 0655 0656 0657 0658 0659 0660 0661 0662 0663 0664 0665 0666 0667 0668 0669 0670 0671 0672 0673 0674 0675 0676 0677 0678 0679 0680 0681 0682 0683 0684 0685 0686 0687 0688 0689 0690 0691 0692 0693 0694 0695 0696 0697 0698 0699 0700 0701 0702 0703 0704 0705 0706 0707 0708 0709 0710 0711 0712 0713 0714 0715 0716 0717 0718 0719 0720 0721 0722 0723 0724 0725 0726 0727 0728 0729 0730 0731 0732 0733 0734 0735 0736 0737 0738 0739 0740 0741 0742 0743 0744 0745 0746 0747 0748 0749 0750 0751 0752 0753 0754 0755 0756 0757 0758 0759 0760 0761 0762 0763 0764 0765 0766 0767 0768 0769 0770 0771 0772 0773 0774 0775 0776 0777 0778 0779 0780 0781 0782 0783 0784 0785 0786 0787 0788 0789 0790 0791 0792 0793 0794 0795 0796 0797 0798 0799 0800 0801 0802 0803 0804 0805 0806 0807 0808 0809 0810 0811 0812 0813 0814 0815 0816 0817 0818 0819 0820 0821 0822 0823 0824 0825 0826 0827 0828 0829 0830 0831 0832 0833 0834 0835 0836 0837 0838 0839 0840 0841 0842 0843 0844 0845 0846 0847 0848 0849 0850 0851 0852 0853 0854 0855 0856 0857 0858 0859 0860 0861 0862 0863 0864 0865 0866 0867 0868 0869 0870 0871 0872 0873 0874 0875 0876 0877 0878 0879 0880 0881 0882 0883 0884 0885 0886 0887 0888 0889 0890 0891 0892 0893 0894 0895 0896 0897 0898 0899 0900 0901 0902 0903 0904 0905 0906 0907 0908 0909 0910 0911 0912 0913 0914 0915 0916 0917 0918 0919 0920 0921 0922 0923 0924 0925 0926 0927 0928 0929 0930 0931 0932 0933 0934 0935 0936 0937 0938 0939 0940 0941 0942 0943 0944 0945 0946 0947 0948 0949 0950 0951 0952 0953 0954 0955 0956 0957 0958 0959 0960 0961 0962 0963 0964 0965 0966 0967 0968 0969 0970 0971 0972 0973 0974 0975 0976 0977 0978 0979 0980 0981 0982 0983 0984 0985 0986 0987 0988 0989 0990 0991 0992 0993 0994 0995 0996 0997 0998 0999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1

1442 3NAFF3SLF3FSKLPGPSDI 141

Query Match 99.1% Score 770; DB 21; Length 145;
 Best Local Similarity 100.0%; Pred. No. 1.8e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTRVLCQVLPALPQVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTRVLCQVLPALPQVVCNTR 60
 QY 62 DVFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPDLPDPRDSSS 121
 DB 61 DVFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPDLPDPRDSSS 120
 QY 122 SKAPPSLPSPSLPGPSDT 141
 DB 121 SKAPPSLPSPSLPGPSDT 140

RESULT 5
 AAU04619
 ID AAU04619 standard; protein: 145 AA.
 AC AAU04619;
 XX
 XX 23-OCT-2001 (first entry)
 DE Human chorionic gonadotropin (hCG) beta, amino acids 1-145.
 KW Human chorionic gonadotropin; hCG; glycoprotein hormone; infertility;
 KW luteinising hormone; LH; follicle stimulating hormone; FSH;
 KW thyroid stimulating hormone; TH;
 OS Homo sapiens.
 PN US6242580-B1.
 PR 05-JUN-2001.
 XX
 XX 31-MAR-1999; 95US-0282357.
 PR 25-AUG-1997; 97US-0918288.
 PR 18-FEB-1994; 94US-0199382.
 PR 12-AUG-1994; 94US-0289396.
 PR 22-SEP-1994; 94US-0310590.
 PR 04-NOV-1994; 94US-0334628.
 PR 07-DEC-1994; 94US-0351591.
 PR 00-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 PA (UNIM) UNIV WASHINGTON.
 PI
 PI Boime I, Moyle WR;
 DR WPI; 2001-424301/45.
 XX

New single chain forms of the glycoprotein hormone quartet useful for generating antibodies specifically immunoreactive with the new compounds, in treating infertility, or as aids for in vivo fertilization techniques -
 Example 19; Column 34; 86pp; English.
 The sequence represents the amino acid sequence of human chorionic gonadotropin (hCG) beta, amino acids 1-145. The protein is an important glycoprotein hormone heterodimer, along with luteinising hormone (LH), which all have identical alpha subunits but differing beta subunits. The proteins are useful for generating antibodies specifically immunoreactive with new compounds, as substitutes for the heterodimeric forms of the hormones, in the treatment of infertility, as aids for in vivo fertilisation techniques, and in other therapeutic methods associated with the native hormones. The single chain proteins are further useful as reagents in a manner similar to the heterodimers,
 CC

as diagnostic tools to detect the presence of antibodies with respect to the native proteins in the biological samples, as control reagents in assay kits for assessing the levels of these hormones in various samples, and in detecting and purifying receptors to which the native hormones bind. The single chain forms of the heterodimers or homodimers have the same amino acid sequence as the native hormones. The single chain forms of the heterodimers or homodimers are reduced since only a single gene is needed to transcribe, translate and process, provide an alternate form thus permitting fine tuning of activity levels and of in vivo half lives. Single chain forms are unique starting materials for identifying truncated forms with the activity of the dimer. The linkage between the subunits permits the protein to be engineered without disturbing the overall folding of the protein.
 CC
 XX Sequence 145 AA;
 SQ

Query Match 99.1% Score 770; DB 22; Length 145;
 Best Local Similarity 100.0%; Pred. No. 1.8e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTRVLCQVLPALPQVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTRVLCQVLPALPQVVCNTR 60
 QY 62 DVFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPDLPDPRDSSS 121
 DB 61 DVFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPDLPDPRDSSS 120
 QY 122 SKAPPSLPSPSLPGPSDT 141
 DB 121 SKAPPSLPSPSLPGPSDT 140

RESULT 6
 AAU04491
 ID AAU04491 standard; protein: 145 AA.
 AC AAU04491;
 XX
 XX 04-SEP-2001 (first entry)
 DT Human chorionic gonadotropin beta-subunit fragment (1-145 amino acids).
 DE Human; single chain gonadotropin analog; anti-infertility; drug;
 KW peptide therapy; luteinising hormone; LH; follicle stimulating hormone; FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 KW glycoprotein; infertility; fusion protein.
 OS Homo sapiens.
 PN
 PR
 PR Key Location/Qualifiers
 FT Misc-difference 145
 FT /note= "Residue 'O' is present at this location in the sequence shown in column 33 of the specification".
 XX
 XX US6238890-B1.
 PN
 PN 29-MAY-2001.
 PD
 PD 25-AUG-1997; 97US-0918288.
 PR 18-FEB-1994; 94US-0199382.
 PR 12-AUG-1994; 94US-0289396.
 PR 22-SEP-1994; 94US-0310590.
 PR 04-NOV-1994; 94US-0334628.
 PR 07-DEC-1994; 94US-0351591.
 PR 00-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 PA (UNIM) UNIV WASHINGTON.
 PI
 PI Boime I, Moyle WR;
 XX

DR WPI; 2001-366474/38.
 XX New DNA or RNA encoding single chain protein useful in treating
 PT infertility, as aids in vitro fertilization techniques, or other
 PT therapeutic methods associated with the native hormones
 XX
 XX Example 19; Column 103-106; 87pp; English.
 XX
 CC The invention relates to human single chain forms of the glycoprotein
 CC hormone quartet which is an agonist or antagonist of luteinizing hormone
 CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
 CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
 CC having identical alpha subunits and differing beta subunits. The agonist
 CC forms of single chain hormones are used in treating infertility, as aids
 CC in vitro fertilization techniques, and other therapeutic methods
 CC as reagents in a mammalian method of detecting the presence of the single chain hormones
 CC detect the presence of antibodies with respect to the native proteins in
 CC biological samples, as control reagents in assay kits for assessing the
 CC levels of these hormones in various samples, in detecting and purifying
 CC receptors to which the native hormones bind. The single chain hormones
 CC are also used in affinity chromatographic preparation of receptors or
 CC antihormone antibodies. They are used as purification tools for
 CC isolation of subsequent preparations of these materials and to monitor
 CC levels of single chain hormones administered as drugs. The single chain
 CC proteins are used to generate antibodies specifically immunoreactive
 CC with these hormones. The present sequence is human chorionic gonadotropin beta
 CC subunit fragment (1-145 amino acids) which is used for constructing
 CC single chain gonadotropin analogs related to the invention. Analog
 CC fusion proteins serves as useful starting compounds for template directed
 CC vaccine design and for the development of hormone-specific vaccines for
 CC use in humans.
 XX
 XX Sequence 145 AA;
 Query Match 99.1%; Score 770; DB 22; Length 145;
 Best Local Similarity 100.0%; Pred. No. 1.8e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVGLVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVGLVLPALPQVVCNVR 60
 QY 62 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 121
 DB 61 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 120
 QY 122 SKAPPPSLPSPRLPGPSDT 141
 DB 121 SKAPPPSLPSPRLPGPSDT 140
 RESULT 7
 AAU00709
 ID AAU00709 standard; Protein; 145 AA.
 XX
 XX AC AAU00709;
 XX
 XX DT 07-SEP-2001 (first entry)
 XX
 XX DE Beta-subunit of Human Chorionic Gonadotropin (HCG).
 XX Human chorionic gonadotropin beta-subunit; HCG; mammal; pregnancy test;
 KW human pituitary luteinizing hormone; reduced fertility; infertility;
 KW contraception; abortion; hormone-associated carcinoma.
 XX Homo sapiens.
 OS
 XX PN W0200124765-A2.
 XX PD 12-APR-2001.
 XX PF
 XX PR
 XX

PF 06-OCT-2000; 2000WO-US27741.
 XX
 PR 06-OCT-1999; 95US-0413564.
 XX
 PA (OHIS) UNIV OHIO STATE RES FOUND.
 XX
 PX Stevens VC;
 XX
 XX WPI; 2001-328306/34.
 XX Peptide analogues of beta-human chorionic gonadotropin which are able to
 PT raise antibodies against human chorionic gonadotropin are used in
 PT vaccines as contraceptives and/or abortifacients
 XX
 PS Claim 1; Page 35; 214pp; English.
 XX
 CC The sequence represents the beta-subunit of human chorionic gonadotropin
 CC (hCG). Peptide analogues of amino acid residues 38-57 of beta-hCG have
 CC a disulfide bridge linking the cysteine residues at positions 38 and 57
 CC to form a loop structure. The peptides are used in vaccines to raise
 CC antibodies against HCG with a significant decrease in antibodies reactive
 CC to human pituitary luteinizing hormone, to control the biological
 CC activity of endogenous HCG. These antibodies may be used in diagnostic
 CC tests to determine hormone levels of mammals. The peptides can be used in
 CC pregnancy tests and in detection of reduced fertility or infertility.
 CC They may also be administered for contraception or abortion processes.
 CC Upon conjugation to a foreign carrier, the peptides may be administered
 CC to humans to treat hormone associated carcinomas.
 XX
 XX Sequence 145 AA;
 Query Match 99.1%; Score 770; DB 22; Length 145;
 Best Local Similarity 100.0%; Pred. No. 1.8e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVGLVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVGLVLPALPQVVCNVR 60
 QY 62 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 121
 DB 61 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 120
 QY 122 SKAPPPSLPSPRLPGPSDT 141
 DB 121 SKAPPPSLPSPRLPGPSDT 140
 RESULT 8
 AAU01139
 ID AAU01139 standard; protein; 145 AA.
 XX
 XX AC AAU01139;
 XX
 XX DT 29-AUG-2001 (first entry)
 XX
 XX DE Human chorionic gonadotropin (HCG) beta-subunit (Structure 1).
 XX Human chorionic gonadotropin; HCG; contraception; abortion;
 KW hormone-related disorder; hormone-associated carcinoma; cancer; diabetes;
 KW vascular disease; Zollinger-Ellison syndrome; chronic digestive disorder;
 KW antigenic modification.
 XX
 OS Homo sapiens.
 XX PN US6217881-B1.
 XX PD 17-APR-2001.
 XX PF 06-JUN-1995; 95US-0467997.
 XX PR 06-OCT-1992; 92US-0958601.
 XX 07-AUG-1992; 92US-0390530.
 PR

PR 04-DEC-1985; 85US-0804642.
XX 17-AUG-1987; 87US-0086401.
PA (OHIS) UNIV OHIO STATE RES FOUND.
XX Stevens VC;
PI WPI: 2001-289819/30.
XX Novel vaccine composition for provoking the formation of antibodies to
XX human chorionic gonadotropin, contains a peptide comprising disulfide
XX bridges linking terminal cysteine residues to form a loop.
XX Disclosure: Column 19; 82pp; English.

CC The present sequence represents the beta-subunit of human chorionic
CC gonadotropin (HCG). The HCG beta-subunit polypeptide sequence is
CC used to isolate 3 novel HCG antigenic peptides (AA001175-AA001177)
CC with a disulfide bridge linking the terminal cysteine amino acids
CC to form a loop. The novel HCG antigenic peptides are used to elicit
CC antibodies that can be used in a vaccine composition for provoking an
CC antibody response to HCG in a mammal. The novel HCG antigenic
CC peptides are useful for the purpose of contraception, abortion,
CC and for the treatment of hormone-related disease states and
CC disorders. Treatment of hormone-associated carcinomas, and to boost an
CC animal's resistance to exogenous proteins, such as viral proteins. The
CC HCG antigenic peptides are also useful for treating cancer, diabetes,
CC muscular disease, hypertension, Zollinger-Ellison syndrome, and
CC cancer. The novel HCG antigenic peptides also describe various structures
CC (AA001140-AA001174) which are used to elicit antibodies that can be
CC which can be synthetically modified to make them more strongly antigenic,
CC thereby provoking the formation of relatively large quantities of
CC antibodies to the non-endogenous materials in the body of the animals,
CC with consequent reduced risk of damage to the immune system, if exposed
CC to non-endogenous materials.

XX
SQ Sequence 145 AA;

Query Match 99.1%; Score 770; DB 22; Length 145;
Best Local Similarity 100.0%; First No. 1.8e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRRCRPINATLAVEREGCPVCITVTNTICAGYCPMTVRVLOGVLPALPOVVCNTR 61
DB 1 SKEPLRRCRPINATLAVEREGCPVCITVTNTICAGYCPMTVRVLOGVLPALPOVVCNTR 60
OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 121
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 120
OY 122 SKAPPSLPSPSLRCPGSDT 141
DB 121 SKAPPSLPSPSLRCPGSDT 140

RESULT 9
AAB71765
ID AAB71765 standard; protein; 145 AA.
XX AAB71765;
XX
XX 02-MAY-2001 (first entry)
XX
XX Beta-human chorionic gonadotropin.
XX Beta-human chorionic gonadotropin; beta-HCG; anti-HIV; cytostatic;
XX antianemic; vascular; osteopathic; antiinflammatory; gene therapy;
XX matrinin; MA peptide; pMA peptide; human immunodeficiency virus;
XX HIV; cancer; wasting disorder; haematopoietic disorder; inflammation;
XX angiogenic disorder.
XX Homo sapiens.

PN HQ200110907-A2.
XX 15-FEB-2001.
XX 05-AUG-2000; 2000WO-US21495.
XX 06-AUG-1999; 98US-0147825.
XX 13-MAR-2000; 2000US-0188777.
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.
XX Gallo R, Bryant J, Lunardi-Iskandar Y, Powell R, Reitz M;
XX Foulke J, Lewis G;
XX WPI: 2001-147510/15.

CC Cells that produce therapeutic beta-human chorionic gonadotropin
CC fragments, useful for the treatment of human immunodeficiency virus
CC infections, cancers, wasting disorders, hematopoietic disorders,
CC inflammation and angiogenic disorders.
XX
XX Claim 1: Page 24; 185pp; English.

CC The present sequence is given in a specification relating to
CC therapeutic polypeptides originally isolated from human early pregnancy
CC urine, now synthetically produced, as well as functional equivalents of
CC these polypeptides. Novel beta-human chorionic gonadotropin (HCG)
CC fragments, designated Maternin (RM) and referred to as MA and pMA
CC peptides, are disclosed. Both native and synthetic MA inhibited growth
CC of human tumor cells implanted into immunodeficient mice by between 60
CC to 100% relative to control. The peptides also inhibited the growth of
CC tumors in nude mice. The peptides may be used for the prevention and treatment of a range of diseases and
CC disorders, including human immunodeficiency virus (HIV) infections,
CC cancers (especially Kaposi's sarcoma), wasting disorders, haematopoietic
CC disorders (e.g. anemias, radiation mediated bone marrow damage and
CC trauma related blood loss), inflammation and angiogenic disorders.

XX
SQ Sequence 145 AA;

Query Match 99.1%; Score 770; DB 22; Length 145;
Best Local Similarity 100.0%; First No. 1.8e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRRCRPINATLAVEREGCPVCITVTNTICAGYCPMTVRVLOGVLPALPOVVCNTR 61
DB 1 SKEPLRRCRPINATLAVEREGCPVCITVTNTICAGYCPMTVRVLOGVLPALPOVVCNTR 60
OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 121
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 120
OY 122 SKAPPSLPSPSLRCPGSDT 141
DB 121 SKAPPSLPSPSLRCPGSDT 140

RESULT 10
AAB04121
ID AAB04121 standard; protein; 145 AA.
XX AAB04121;
XX
XX 11-APR-2001 (first entry)
XX
XX Beta subunit of human chorionic gonadotropin (HCG).
XX Human chorionic gonadotropin; HCG; polyclonal antibody; Ab;
XX vaccine; contraception; abortion; hormone; therapy; treatment;
XX disease; carcinoma; immune response; steroid; human.
XX Homo sapiens.

Key	Location/Qualifiers
1..20	
/label=	signal sequence
W09116922-A.	
14-NOV-1991.	
07-MAY-1991;	91MO-USO3162.
08-MAY-1990;	90US-0520703.
(UTNE-) UNIV MED NEW JERSEY.	
Campbell RK, Moyle WR;	
WPI: 1991-33328/48.	
N-PSDB; NAO14800.	
New glyco-protein hormone analogues - for inducing fertility as	
immuno-castration agents, for suppressing reproductive system	
development and as immuno-contraceptive vaccines.	
Example 3, Fig 4a; 94pp; English.	
The sequence is encoded by an analogue of hCG beta subunit cDNA contg	
two silent mutations which eliminate restriction sites. It was prep	
from the plasmid pMB-hCG-beta, a construct contg. the hCG beta	
subunit isolated from human placenta (Fiddes and Goodman) in	
plasmid pMB, a derivative of pUC18 designed to facilitate cloning	
of glycoprotein hormones. The sequence was used as the starting	
construct for many mutants. (See ARI15061 R13125 and ARI15161 R15198)	
Sequence 165 AA;	
Query Match	99.1% Score 770; DB 12; Length 165;
Best Local Similarity	100.0%; Pred. No. 2e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps	
QY 2 SKEPLRRCRPTNATLAVEKCCPCVITWTTCAGTCPTTRVQLQGVLPALPQVCNVR 61	
21 SKEPLRRCRPTNATLAVEKCCPCVITWTTCAGTCPTTRVQLQGVLPALPQVCNVR 80	
62 DYRESIRLPCGPRGVNVVYAVALSQCALCRSTTDCGPKDPLTCDPPRFQDSSS 121	
81 DYRESIRLPCGPRGVNVVYAVALSQCALCRSTTDCGPKDPLTCDPPRFQDSSS 140	
122 SKAPPSLSPSLRPGPSDT 141	
141 SKAPPSLSPSLRPGPSDT 160	
RESULT 12	
AA105748	
ID AA105748 standard; Protein; 165 AA.	
AC AA105748;	
DT 19-JUL-1999 (first entry)	
XX Human chorionic gonadotropin.	
XX Human chorionic gonadotropin; hCG; thyroid stimulating hormone;	
KW TSH; thyroid cancer; hypothyroidism; Graves' disease; prognosis;	
KW diagnosis; therapy.	
XX Homo sapiens.	
Key	Location/Qualifiers
1..20	
/label=	"signal peptide"
21..165	"mature protein"

FT Peptide 134..165
/note= "C-terminal extension peptide"

XX W0915665-A2.
XX 01-APR-1999.
XX 22-SEP-1998; 98WO-US19772.
XX 22-SEP-1997; 97US-0939472.
XX (DYMA-) UNIV MARYLAND BALTIMORE.
XX Szkludinski MW, Weintraub BD;
XX WPI; 1999-254714/21.
XX N-PSDB; AAM25387.

XX New thyroid stimulating hormone mutants with increased bioactivity

XX Disclosure; Fig 3; 44pp; English.

XX The present sequence represents human chorionic gonadotropin (hCG). The invention is based upon the discovery that mutant human glycoprotein hormone common alpha subunit (see AAY05746) and mutant human thyroid stimulating hormone (TSH) beta subunit (see AAY05747), each comprising amino acid substitutions relative to the wild-type sequence, can be produced and assembled to form mutant TSH heterodimers, or mutant hCG heterodimers, or both, in vitro and longer half life in vivo than wild-type heterodimers. CC In one embodiment, a mutant TSH heterodimer comprises the TSH beta subunit joined via a peptide bond at its C-terminus to the CC N-terminus of the C-terminal extension peptide of hCG, and an CC alpha subunit. The new mutant TSH heterodimers and analogues are CC used in claimed methods of treating or preventing hypothyroidism, CC treating or diagnosing thyroid cancer, and diagnosing or screening CC for a disease or disorder characterised by the presence of CC antibodies against TSH receptor, such as Graves' disease. The TSH CC heterodimers and analogues are used in the diagnosis and therapy of CC therapeutics to the thyroid or to thyroid cancer cells.

XX Sequence 165 AA:

Query Match 99.1%; Score 770; DB 20; Length 165;
Best Local Similarity 100.0%; Pred. No. 2e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPNATLAVREKGGPCVITVNTTCAGTCPTMTRVLOGLPALPQVVCNTR 61
DB 21 SKEPLRRCRPNATLAVREKGGPCVITVNTTCAGTCPTMTRVLOGLPALPQVVCNTR 80
QY 62 DVRFESIRLPGCGRGNVPVSYVALSCCALCRSTTDCGGPKDPLCTCDPRPDSSS 121
DB 81 DVRFESIRLPGCGRGNVPVSYVALSCCALCRSTTDCGGPKDPLCTCDPRPDSSS 140
QY 122 SKAPPPSLPSPRLPGPSDT 141
DB 141 SKAPPPSLPSPRLPGPSDT 160

RESULT 13
AAW95533
ID AAW95533 standard; Protein: 165 AA.

XX AAW95533;

XX 08-JUN-1999 (first entry)

XX Human chorionic gonadotropin beta subunit hCG-beta'.

XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;

XX stability; primer; amplification; PCR; mutation.

XX Homo sapiens.

XX W09858957-A2.

XX 30-DEC-1998.

XX 25-JUN-1998; 98WO-US13070.

XX 25-JUN-1997; 97US-0050784.

XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.

XX (MCIN-) MCINNIS P G.

XX Moyle WR;

XX WPI; 1999-081219/07.

XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH or hTSH, have an intersubunit disulphide crosslink between the alpha- and beta-subunits to improve stability

XX Disclosure; Fig 4A; 139pp; English.

XX The invention relates to the production of analogues of a heterodimeric CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin (hCG), human luteinizing hormone (hLH), human follicle stimulating hormone (hFSH), human thyroid stimulating hormone (hTSH), and analogues thereof, which are modified to contain an intersubunit disulphide bond, CC between an alpha-subunit cysteine and a beta-subunit cysteine, for CC improved stability, the analogue retaining at least a portion of the CC bioactivity for the corresponding native GPH receptor. This sequence CC represents the wild type hCG-beta subunit used for the generation of CC the modified GPHs. The improved analogues are designed specifically CC to reduce perturbation of the 3-dimensional structure of the hormone, CC thereby creating greater likelihood that the dimer will be formed in vivo CC and the formed dimer will have affinity for the native receptors and have CC the same biological activities as the native hormones. The analogues can have uses CC as for the native GPHs.

XX Sequence 165 AA:

Query Match 99.1%; Score 770; DB 20; Length 165;
Best Local Similarity 100.0%; Pred. No. 2e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPNATLAVREKGGPCVITVNTTCAGTCPTMTRVLOGLPALPQVVCNTR 61
DB 21 SKEPLRRCRPNATLAVREKGGPCVITVNTTCAGTCPTMTRVLOGLPALPQVVCNTR 80
QY 62 DVRFESIRLPGCGRGNVPVSYVALSCCALCRSTTDCGGPKDPLCTCDPRPDSSS 121
DB 81 DVRFESIRLPGCGRGNVPVSYVALSCCALCRSTTDCGGPKDPLCTCDPRPDSSS 140
QY 122 SKAPPPSLPSPRLPGPSDT 141
DB 141 SKAPPPSLPSPRLPGPSDT 160

RESULT 14
AAB15358
ID AAB15358 standard; protein; 165 AA.

XX AAB15358;

XX 15-FEB-2001 (first entry)

XX Human chorionic gonadotropin beta-subunit.

XX human; chorionic gonadotropin; hCG; DNA vaccine; cancer;

XX fertility control; contraceptive; immunogen.

```
XX OS Homo sapiens.
XX PN WO200041717-A2.
XX PD 20-JUL-2000.
XX PF 17-DEC-1999; 99WO-US30232.
XX PR 18-DEC-1998; 98US-0112910.
XX PA (AVTB-) AVI BIOPHARMA INC.
XX PI Iversen PL;
XX MPI; 2000-456124/40.
XX N-PSDB; AAA73833.
XX Inducing immune response to human chorionic gonadotropin (hCG), useful
XX for treatment of cancer and fertility control comprises exposing cells
XX to nucleic acid construct encoding hCG immunogenic epitope.
XX Claim 25; Fig 1A; 45pp; English.
XX The present sequence comprises the human chorionic gonadotropin (hCG)
XX beta-subunit. Fragmentation of the present sequence into fragments
XX the invention which involve the use of DNA techniques to produce
XX to induce an immune response and enable the treatment of cancer and
XX provide a novel method of fertility control. In particular, they can be
XX used to treat colorectal, breast and lung cancer, as hCG is associated
XX with these types of tumours.
XX Sequence 165 AA:
Query Match 99.1%; Score 770; DB 21; Length 165;
Best Local Similarity 100.0%; Pred. No. 28-62; Mismatches 0; Gaps 0;
Matches 140; Conservative 0; Indels 0;
QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNTR 61
DB 1 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNTR 80
QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
DB 81 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGPSDT 141
DB 141 SKAPPSLPSPRLPGPSDT 160
RESULT 15
ID AAB49896
XX AAB49896 standard; protein; 165 AA.
XX AAB49896;
XX 06-MAR-2001 (first entry)
XX Human chorionic gonadotropin hCG.
XX Human chorionic gonadotropin; hCG; cancer; vaccine;
XX immunogenic epitope.
XX Homo sapiens.
XX WO200069915-A2.
XX 23-NOV-2000.
XX 15-MAY-2000; 2000WO-US13392.
XX 17-MAY-1999; 99US-0134419.
XX PR
```

```
PR 17-MAY-1999; 99US-0134432.
XX (AVTB-) AVI BIOPHARMA INC.
XX Iversen PL;
XX MPI; 2001-025010/03.
XX Human, anti-human chorionic gonadotropin (hCG) monoclonal antibody
XX immunoreactive with a 2imer N-terminal fragment of C-terminal 37
XX subunits of hCG beta subunit, used to treat cancer along with vaccine
XX comprising hCG groups -
XX Disclosure; Fig 1; 40pp; English.
XX The present invention provides the sequences of several immunogenic
XX epitopes and antibodies to human chorionic gonadotropin (hCG). These can
XX be used in the treatment of cancers where hCG synthesis occurs, including
XX bladder, pancreatic, cervical, colorectal, lung, oesophageal, breast,
XX gastric, prostate, ovarian, uterine and endometrial cancers.
XX Sequence 165 AA:
Query Match 99.1%; Score 770; DB 22; Length 165;
Best Local Similarity 100.0%; Pred. No. 28-62; Mismatches 0; Gaps 0;
Matches 140; Conservative 0; Indels 0;
QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNTR 61
DB 21 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNTR 80
QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
DB 81 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGPSDT 141
DB 141 SKAPPSLPSPRLPGPSDT 160
RESULT 16
ID AAY43298
XX AAY43298 standard; protein; 203 AA.
XX AAY43298;
XX 19-JAN-2000 (first entry)
XX HCG beta subunit-Jun fusion protein sequence.
XX Cysteine knot protein; protein formation; heterodimeric protein analog;
XX desglycosylated glycoprotein hormone; infertility; immunogen; antigen;
XX polycystic ovarian disease; hCG; human; chorionic gonadotropin;
XX beta subunit; therapy; Jun.
XX Homo sapiens.
XX OS Synthetic.
XX WO9953065-A1.
XX 21-OCT-1999.
XX 13-APR-1999; 99WO-US08018.
XX 14-APR-1998; 98US-0059625.
XX (UYNE-) UNIV NEW JERSEY.
XX Moyle WR;
XX MPI; 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
```

Example 7: Fig 20; 73pp; English.

AA	Sequence	203 AA;
----	----------	---------

QY	2	SKEPLRRCBP	INATLAVEKGGPCVCITVNT	ICAGYCPMTAVLQGVCLDALPQVCNTR	61
DB	21	SKEPLRRCBP	INATLAVEKGGPCVCITVNT	ICAGYCPMTAVLQGVCLDALPQVCNTR	80
QY	62	DVRFESTRLPCC	PGRVNPVSVAAVLSOCALCRNST	DCGGKPDHPIUICDOPRFQDSSS	121
DB	81	DVRFESTRLPCC	PGRVNPVSVAAVLSOCALCRNST	DCGGKPDHPIUICDOPRFQDSSS	140
QY	122	SKAPPSPSLPS	SPSRSPGSDT	141	
DB	141	SKAPPSPSLPS	SPSRSPGSDT	160	

AA43303
ID AA43303 standard: Protein: 206 AA

XX
DT 19-JAN-2000 (first entry)

XX	Cysteine knot protein; protein formation; heterodimeric protein analog;
KW	desglycosylated glycoprotein hormone; infertility; immunogen; antigen;
KW	polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
KW	beta subunit; therapy; Jun.

AA
PN
WO9953065-A1.XX
PF - 13-APR-1999;

XX PA (UYNE-) UNIV NEW JERSEY.

XX

Methods for producing heterodimer

XX	Sequence	206 AA;
SQ		

Best Local Similarity 100.0%; Pred. NO. 2.5E-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPPTMTRVLGVLPA LPQVVVCNR 80

Db 81 DVRFESIRLPGCPRGYNPVVSAYVALSCQCALCRRSTTDCGGPKDHLPLTCDDPRFQDSSS 1400

Db 141 SKAPPSLPSPRLPGPSDT 160

RESUL 10
AA43299

XX
NY 456789DE
DE
XX
XX
nco beta subunit-jun fusion protein sequence

XX
XX
XX

PN W09953065-A1.

PF 13-APR-1999; 99WO-US08018.

PA (UYNE-) UNIV NEW JERSEY .

XX Moyle WR;
 XX WPI: 1999-620431/53.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 XX from subunits of cysteine knot proteins -
 XX Example 7: Fig 20; 73pp; English.

This sequence is a fusion protein of HCG and Jun. The invention relates to a method of forming a cysteine knot protein (1) having alpha and beta subunits comprising attaching a dimerisation domain (DD) to either the N-terminus of both subunits or the C-terminus of the alpha subunit and to the C-terminus of the beta subunit and dimerising the products to form a heterodimeric protein analog (11). The method is used to produce heterodimeric protein analogs of deglycosylated glycoprotein hormones, particularly analogues of luteinizing hormone, where caused by polycystic ovarian disease (associated with excessive levels of luteinizing hormone). Products that retain DD's are also useful as immunogens or antigens (since a DD may contain highly antigenic amino acid sequences). Attachment of a DD (which may be removed later) facilitates the formation of heterodimers, that have similar structures (and thus receptor-binding and immunogenic properties) to native dimers, and allows the combination of subunits that would otherwise combine poorly, or not at all. The N-terminal part of a glycoprotein hormone may be modified without loss of activity, and attachment of the DD reduces formation of homodimers. Heterodimers have longer circulation times in vivo than individual subunits.

XX Sequence 209 AA;

Query Match 99.1%; Score 770; DB 20; Length 209;
 Best Local Similarity 100.0%; Pred. No. 2.6e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVKEGCPVCTVTTTCAGTCPTMTVRVGLQVLPALPQVVCNTR 61
 DB 21 SKEPLPRCPINATLAVKEGCPVCTVTTTCAGTCPTMTVRVGLQVLPALPQVVCNTR 80

QY 62 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPFRFQDSSS 121
 DB 81 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPFRFQDSSS 140

QY 122 SKAPPSLPSPRLPGPSDT 141
 DB 141 SKAPPSLPSPRLPGPSDT 160

RESULT 19
 AAY43278
 ID AAY43278 standard; Protein; 212 AA.
 XX AAY43278;
 XX 19-JAN-2000 (first entry)
 XX Human CG beta subunit-Jun fusion protein sequence.

XX Cysteine knot protein; protein formation: heterodimeric protein analog;
 XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 XX polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
 XX beta subunit; therapy; Jun.
 XX Homo sapiens.
 XX Synthetic.
 XX WO953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99WO-US08018.

PR 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 XX from subunits of cysteine knot proteins -
 XX Example 4: Fig 17; 73pp; English.

This sequence represents a fusion protein of the human chorionic gonadotrophin (HCG) beta subunit and Jun. The invention relates to a method of forming a cysteine knot protein (1) having alpha and beta subunits comprising attaching a dimerisation domain (DD) to either the N-terminus of both subunits or the C-terminus of the alpha subunit and to the C-terminus of the beta subunit and dimerising the products to form a heterodimeric protein analog (11). The method is used to produce heterodimeric protein analogs of deglycosylated glycoprotein hormones, particularly analogues of luteinizing hormone, where caused by polycystic ovarian disease (associated with excessive levels of luteinizing hormone). Products that retain DD's are also useful as immunogens or antigens (since a DD may contain highly antigenic amino acid sequences). Attachment of a DD (which may be removed later) facilitates the formation of heterodimers, that have similar structures (and thus receptor-binding and immunogenic properties) to native dimers, and allows the combination of subunits that would otherwise combine poorly, or not at all. The N-terminal part of a glycoprotein hormone may be modified without loss of activity, and attachment of the DD reduces formation of homodimers. Heterodimers have longer circulation times in vivo than individual subunits.

XX Sequence 212 AA;

Query Match 99.1%; Score 770; DB 20; Length 212;
 Best Local Similarity 100.0%; Pred. No. 2.6e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVKEGCPVCTVTTTCAGTCPTMTVRVGLQVLPALPQVVCNTR 61
 DB 68 SKEPLPRCPINATLAVKEGCPVCTVTTTCAGTCPTMTVRVGLQVLPALPQVVCNTR 127

QY 62 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPFRFQDSSS 121
 DB 128 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPFRFQDSSS 187

QY 122 SKAPPSLPSPRLPGPSDT 141
 DB 188 SKAPPSLPSPRLPGPSDT 207

RESULT 20
 AAY43304
 ID AAY43304 standard; Protein; 212 AA.
 XX AAY43304;
 XX 19-JAN-2000 (first entry)
 XX HCG beta subunit-Jun fusion protein sequence.

XX Cysteine knot protein; protein formation: heterodimeric protein analog;
 XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 XX polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
 XX beta subunit; therapy; Jun.
 XX Homo sapiens.
 XX Synthetic.
 XX WO953065-A1.

PD 21-OCT-1999.
 XX
 PF 13-APR-1999; 99WO-US08018.
 XX
 PR 14-APR-1998; 98US-0059625.
 XX
 PA (UYNE-) UNIV NEW JERSEY.
 XX
 PI Moyle WR;
 XX
 DR WPI: 1999-620431/53.
 XX
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins.
 XX
 PS Example 7; Fig 20; 73pp; English.
 CC
 CC This sequence is a fusion protein of HCG and Jun. The invention
 CC relates to method of forming a fusion protein (I) having alpha
 CC and beta subunits comprising subunits of the N-terminus of the
 CC either the N-termini of both subunits or the beta-terminus of the
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinizing hormone). Products that retain DO's are also useful
 CC as immunogens or antigens (since a DO may contain highly antigenic
 CC residues). Immunogens, antigens, and antibodies (DO which may be removed later)
 CC facilitates the formation of heterodimeric proteins to native dimers,
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DO reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX
 SQ Sequence 212 AA;
 Query Match 99.18; Score 770; DB 20; Length 212;
 Best Local Similarity 100.0%; Pred. No. 2,6e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPRIATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 61
 DB 21 SKEPLRPRCPRIATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 80
 QY 62 DYRFESIRLPGCPRGVNPVSYAVALSCQALCRRSTTDCGGPKDHPDLTCDDPRFQDSSS 121
 DB 81 DYRFESIRLPGCPRGVNPVSYAVALSCQALCRRSTTDCGGPKDHPDLTCDDPRFQDSSS 140
 QY 122 SKAPPSLPSPSLPGPSDT 141
 DB 141 SKAPPSLPSPSLPGPSDT 160
 RESULT 21
 ID AAU04602 standard; Protein: 265 AA.
 XX
 XC AAU04602;
 XX
 DT 23-OCT-2001 (first entry)
 DE Single chain gonadotropin analogue #1.
 XX
 KW Human; glycoprotein hormone; infertility; in vivo fertilisation;
 KW single chain gonadotropin.
 OS Homo sapiens.
 XX
 XN US6242580-B1.
 XX

PD 05-JUN-2001.
 XX
 PF 31-MAR-1999; 99US-0382357.
 XX
 PR 25-AUG-1997; 97US-0918288.
 PR 18-FEB-1994; 94US-0199382.
 PR 12-AUG-1994; 94US-0289396.
 PR 22-SEP-1994; 94US-0310590.
 PR 04-NOV-1994; 94US-0351581.
 PR 07-DEC-1994; 94US-0351591.
 PR 07-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 XX
 PA (UNIW) UNIV WASHINGTON.
 XX
 PI Boime I, Moyle WR;
 XX
 DR WPI: 2001-424301/45.
 DR N-PSDB; AAS08485.
 XX
 PT New single chain forms of the glycoprotein hormone quartet useful for
 PT generating antibodies specifically immunoreactive with the new
 PT compounds, in treating infertility, or as aids for in vivo
 PT fertilization techniques.
 XX
 PS Example 5; Fig 5; 86pp; English.
 CC
 CC The sequence represents the amino acid sequence of single chain
 CC gonadotropin analogue #1. The glycoprotein hormone analogue is
 CC constructed by generating antibodies specifically immunoreactive with new
 CC compounds that are immunoreactive with the native hormones.
 CC In the treatment of infertility, as an aid for in vivo fertilisation,
 CC techniques, and in other therapeutic methods associated with the native
 CC hormone. The single chain protein is further useful as a reagent in a
 CC manner similar to the heterodimer, as a diagnostic tool to detect the
 CC presence of antibodies with respect to the native proteins in the
 CC biological samples, as a control reagent in assay kits for assessing the
 CC levels of these hormones in various samples, and in detecting and
 CC purifying receptors to which the native hormones bind. The single chain
 CC forms of the heterodimers or homodimers have the following advantages
 CC over the native hormones: they are more stable, prolonged to treatment
 CC production and process, provide an alternate form thus permitting fine
 CC tuning of activity levels and of in vivo half lives. Single chain forms
 CC are unique starting materials for identifying truncated forms with the
 CC activity of the dimer. The linkage between the subunits permits the
 CC protein to be engineered without disturbing the overall folding of the
 CC protein.
 XX
 SQ Sequence 265 AA;
 Query Match 99.18; Score 770; DB 22; Length 265;
 Best Local Similarity 100.0%; Pred. No. 3.3e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPRIATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 61
 DB 21 SKEPLRPRCPRIATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 80
 QY 62 DYRFESIRLPGCPRGVNPVSYAVALSCQALCRRSTTDCGGPKDHPDLTCDDPRFQDSSS 121
 DB 81 DYRFESIRLPGCPRGVNPVSYAVALSCQALCRRSTTDCGGPKDHPDLTCDDPRFQDSSS 140
 QY 122 SKAPPSLPSPSLPGPSDT 141
 DB 141 SKAPPSLPSPSLPGPSDT 160
 RESULT 22
 ID AAU04614 standard; Protein: 265 AA.
 XX
 XN AAU04614;
 XX

XX 23-OCT-2001 (first entry)
 XX Single chain gonadotropin analogue #1a.
 XX Human; glycoprotein hormone; infertile; in vivo fertilisation;
 XX single chain gonadotropin.
 XX Homo sapiens.
 XX US6242580-B1.
 XX 05-JUN-2001.
 XX 31-MAR-1999; 99US-0282357.
 XX 25-AUG-1997; 97US-0918288.
 XX 18-FEB-1994; 94US-0199382.
 XX 12-AUG-1994; 94US-0289396.
 XX 22-SEP-1994; 94US-0310590.
 XX 04-NOV-1994; 94US-0334628.
 XX 07-DEC-1994; 94US-0351591.
 XX 07-JUN-1995; 95US-0475049.
 XX 05-MAY-1997; 97US-0855524.
 XX (UNIM) UNIV WASHINGTON.
 XX Boime I, Moyle WR;
 XX WPI: 2001-424301/45.
 XX N-PSDB: AAS08509.
 XX New single chain forms of the glycoprotein hormone quartet useful for
 XX generating antibodies specifically immunoreactive with the new
 XX compounds, in treating infertility, or as aids for in vivo
 XX fertilization techniques -
 XX Example 16; Fig 17; 86pp; English.
 XX The sequence represents the amino acid sequence of single chain
 XX gonadotropin analogue #1a. The glycoprotein hormone analogue is
 XX useful for generating antibodies specifically immunoreactive with new
 XX compounds, as a substitute for the heterodimeric forms of the hormones,
 XX in the treatment of infertility, as an aid for in vivo fertilization
 XX techniques, and in other therapeutic methods associated with the native
 XX hormone. The single chain protein is further useful as a reagent in a
 XX presence of antibodies with respect to the heterodimeric forms of the
 XX biological samples, as a control reagent in assay kits for assessing the
 XX levels of these hormones in various samples, and in detecting and
 XX purifying receptors to which the native hormones bind. The single chain
 XX forms of the heterodimers or homodimers have the following advantages
 XX over their dimeric forms: they are more stable, problems of recombinant
 XX production are reduced since only a single gene is needed to transcribe,
 XX translate and process, provide an alternate form thus permitting fine
 XX tuning of activity levels and of in vivo half lives. Single chain forms
 XX are unique starting materials for identifying truncated forms with the
 XX activity of the dimer. The linkage between the subunits permits the
 XX protein to be engineered without disturbing the overall folding of the
 XX protein.
 XX Sequence 265 AA:
 Query Match 99.1%; Score 770; DB 22; Length 265;
 Best Local Similarity 100.0%; Pred. No. 3.3e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKPLPRPCRPINATLAVEKEGCPVCITVNTTICAGYCTPTMTVLQGVLPALPOVVCNVR 61
 DB 21 SKPLPRPCRPINATLAVEKEGCPVCITVNTTICAGYCTPTMTVLQGVLPALPOVVCNVR 80
 QY 62 DVRFESIRLPCRGVNVVSYAVALSQCALCRSTTDCGPKDHLPTCDPRFDSSS 121
 |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

DB 81 DVRFESIRLPCRGVNVVSYAVALSQCALCRSTTDCGPKDHLPTCDPRFDSSS 140
 QY 122 SKAPPSLPSPSLPSPSDT 141
 |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 DB 141 SKAPPSLPSPSLPSPSDT 160
 RESULT 23
 ID AAE04474 standard; Protein; 265 AA.
 AC AAE04474;
 DT 04-SEP-2001 (first entry)
 XX Human single chain gonadotropin analog no:1.
 KW Human; single chain gonadotropin analog no:1; anti-infertility; drug;
 KW peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;
 KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 KW glycoprotein; infertility; fusion protein.
 OS Homo sapiens.
 OS Synthetic.
 XX Key
 XX Region
 FT /note= "Corresponds to 1-145 amino acids of human
 FT chorionic gonadotropin (CG) beta-subunit".
 FT 166..173
 FT Region
 FT /note= "Linker peptide"
 FT 174..265
 FT /note= "Corresponds to 1-92 amino acids of human single
 FT chain gonadotropin alpha-subunit".
 XX US6238890-B1.
 XX 29-MAY-2001.
 XX 25-AUG-1997; 97US-0918288.
 XX 18-FEB-1994; 94US-0199382.
 XX 12-AUG-1994; 94US-0289396.
 XX 22-SEP-1994; 94US-0310590.
 XX 04-NOV-1994; 94US-0334628.
 XX 07-DEC-1994; 94US-0351591.
 XX 07-JUN-1995; 95US-0475049.
 XX 05-MAY-1997; 97US-0855524.
 XX (UNIM) UNIV WASHINGTON.
 XX Boime I, Moyle WR;
 XX WPI: 2001-366474/38.
 XX N-PSDB: AAD08785.
 XX New DNA or RNA encoding single chain protein useful in treating
 XX infertility, as aids in vitro fertilization techniques, or other
 XX therapeutic methods associated with the native hormones -
 XX Claim 9; Fig 5; 87pp; English.
 XX The invention relates to human single chain forms of the glycoprotein
 XX hormone quartet which is an agonist or antagonist of luteinizing hormone
 XX (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
 XX (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
 XX having identical alpha subunits and differing beta subunits. The agonist
 XX forms of single chain hormones are used in treating infertility, as aids
 XX in vitro fertilization techniques, and other therapeutic methods
 XX associated with the native hormones. The single chain hormones are useful
 XX as reagents in a manner similar to heterodimers, as diagnostic tools to
 XX detect the presence of antibodies with respect to the native proteins in
 XX biological samples, as control reagents in assay kits for assessing the

CC levels of these hormones in various samples, in detecting and purifying
 CC receptors to which the native hormones bind. The single chain hormones
 CC are also used in affinity chromatographic preparation of receptors or
 CC antihormone antibodies. They are used as purification tools for
 CC isolation of subsequent preparations of these materials and to monitor
 CC levels of single chain hormones administered as drugs. The single chain
 CC glycoproteins are used to generate antibodies specifically immunoreactive
 CC with these new compounds, as substitutes for the heterodimeric forms of
 CC hormones. The present sequence is human single chain gonadotropin analog
 CC no:1a related to the invention. Analog no:1a is a fusion protein consisting
 CC of human chorionic gonadotropin (CG) beta-subunit (1-145 amino acids)
 CC fused to human single chain gonadotropin alpha-subunit (1-92 amino acids)
 CC by a linker sequence. This analog serves as a useful starting compound
 CC for template directed vaccine design and for the development of hormone-
 CC specific vaccines for use in humans.

XX Sequence 265 AA;

Query Match 99.13; Score 770; DB 22; Length 265;
 Best Local Similarity 100.0%; Posed No. 3,3e+62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 2 SKEPLRRCRPTNATLAVKEGCPVCTVTTCAGTCPTMTVRVLCVLPALPQVVCNVR 61
 Db 21 SKEPLRRCRPTNATLAVKEGCPVCTVTTCAGTCPTMTVRVLCVLPALPQVVCNVR 80
 Oy 62 DVRFESIRLPCPGVGNVYSYVALSCQALCRSTTDCGGPKDHPDLCDDPRQDSSS 121
 Db 81 DVRFESIRLPCPGVGNVYSYVALSCQALCRSTTDCGGPKDHPDLCDDPRQDSSS 140
 Oy 122 SKAPPSLPSPRLPCPSDT 141
 Db 141 SKAPPSLPSPRLPCPSDT 160

RESULT 24
 AA044486
 ID ARE04486 standard; Protein; 265 AA.
 AC AA04486;

04-SEP-2001 (first entry)

Human single chain gonadotropin analog no:1a.

Human; single chain gonadotropin analog no:1a; anti-infertility; drug;
 peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;
 FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 glycoprotein; infertility; fusion protein; mutant; mutin.

OS Homo sapiens.
 QS Synthetic.

XX Key Location/Qualifiers
 FH Region 21..165
 FT /note= "Corresponds to 1-145 amino acids of human
 FT chorionic gonadotropin (CG) beta-subunit".
 FT Region 166..173
 FT /note= "Linker peptide".
 FT Region 174..265
 FT /note= "Corresponds to 1-92 amino acids of human single
 FT chain gonadotropin alpha-subunit".
 FT Misc-difference 246
 FT /note= "Wild type Asn substituted with Gln"
 FT Misc-difference 251
 FT /note= "Wild type Asn substituted with Gln"

XX US6238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 9705-0918288.

XX

PR 18-FEB-1994; 94US-0199382.
 PR 12-AUG-1994; 94US-0289396.
 PR 22-SEP-1994; 94US-0310590.
 PR 04-NOV-1994; 94US-0334628.
 PR 07-DEC-1994; 94US-0351591.
 PR 07-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 XX (UNIW) UNIV WASHINGTON.
 XX Boime I, Moyle WR;
 XX WPI; 2001-366474/38.
 DR N-PSDB: AAD08809.
 XX New DNA or RNA encoding single chain protein useful in treating
 PT infertility, as aids in vitro fertilization techniques, or other
 PT therapeutic methods associated with the native hormones .
 XX Claim 9; Fig 17; 87pp; English.

CC The invention relates to human single chain forms of the glycoprotein
 CC hormone quartet which is an agonist or antagonist of luteinizing hormone
 CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
 CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
 CC having identical alpha subunits and differing beta subunits. The agonist
 CC forms of single chain hormones are used in treating infertility, as aids
 CC in vitro fertilization techniques, and other therapeutic methods useful
 CC as vaccines in a manner similar to heterodimers, as diagnostic tools to
 CC detect the presence of antibodies with respect to the native proteins in
 CC biological samples, as control reagents in assay kits for assessing the
 CC levels of these hormones in various samples, in detecting and purifying
 CC receptors to which the native hormones bind. The single chain hormones
 CC are also used in affinity chromatographic preparation of receptors or
 CC antihormone antibodies. They are used as purification tools for
 CC isolation of subsequent preparations of these materials and to monitor
 CC levels of single chain hormones administered as drugs. The single chain
 CC glycoproteins are used to generate antibodies specifically immunoreactive
 CC with these new compounds, as substitutes for the heterodimeric forms of
 CC hormones. The present sequence is human single chain gonadotropin analog
 CC no:1a related to the invention. Analog no:1a is a fusion protein
 CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-145 amino
 CC acids) fused to human single chain gonadotropin alpha-subunit (1-92 amino
 CC acids) by a linker sequence. This analog serves as a useful starting
 CC compound for template directed vaccine design and for the development of
 CC hormone-specific vaccines for use in humans.

SQ Sequence 265 AA;

Query Match 99.13; Score 770; DB 22; Length 265;
 Best Local Similarity 100.0%; Posed No. 3,3e+62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 2 SKEPLRRCRPTNATLAVKEGCPVCTVTTCAGTCPTMTVRVLCVLPALPQVVCNVR 61
 Db 21 SKEPLRRCRPTNATLAVKEGCPVCTVTTCAGTCPTMTVRVLCVLPALPQVVCNVR 80
 Oy 62 DVRFESIRLPCPGVGNVYSYVALSCQALCRSTTDCGGPKDHPDLCDDPRQDSSS 121
 Db 81 DVRFESIRLPCPGVGNVYSYVALSCQALCRSTTDCGGPKDHPDLCDDPRQDSSS 140
 Oy 122 SKAPPSLPSPRLPCPSDT 141
 Db 141 SKAPPSLPSPRLPCPSDT 160

RESULT 25

AA43285

ID AA43285 standard; Protein; 273 AA.

XX AC AA43285;

XX

DT 19-JAN-2000 (first entry)
 XX HCG beta subunit-Jun fusion protein sequence.
 DE
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 XX
 OS Homo sapiens.
 OS Synthetic.
 XX
 XX WO9953065-A1.
 XX
 PD 21-OCT-1999.
 XX
 XX 13-APR-1999; 99WO-US08018.
 XX
 XX 14-APR-1998; 98US-0059625.
 XX
 XX (UYNE-) UNIV NEW JERSEY.
 XX
 XX Moyle WR;
 XX
 XX WPI; 1999-620431/53.
 XX
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 PS Example 6; Fig 18; 73pp; English.
 XX
 CC This sequence is a fusion protein of hCG and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-termini of both subunits or the N-terminus of the
 CC the products to form heterodimers (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX
 SQ Sequence 273 AA;
 Query Match 99.1%; Score 770; DB 20; Length 273;
 Best Local Similarity 100.0%; Pred.No. 3.4e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLPRCPRIINATLAVEKGGPCVITVNTTICAGTCPTMTVRVLSQVLPALPQVWYNR 61
 DB 129 SKEPLPRCPRIINATLAVEKGGPCVITVNTTICAGTCPTMTVRVLSQVLPALPQVWYNR 188
 QY 62 DYRFESIRLPGCPGVNPNVSVYAVALSQCACALCRSTTDCGPKDHLTCDDPRQDSSS 121
 DB 189 DYRFESIRLPGCPGVNPNVSVYAVALSQCACALCRSTTDCGPKDHLTCDDPRQDSSS 248
 QY 122 SKAPPPSLPSPRLPGSDT 141
 DB 249 SKAPPPSLPSPRLPGSDT 268
 RESULT 26
 ID ANY43292 standard; Protein; 273 AA.

XX ANY43292;
 AC 19-JAN-2000 (first entry)
 XX HCG beta subunit-Jun fusion protein sequence.
 DE
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 XX
 OS Homo sapiens.
 OS Synthetic.
 XX
 XX WO9953065-A1.
 XX
 PD 21-OCT-1999.
 XX
 XX 13-APR-1999; 99WO-US08018.
 XX
 XX 14-APR-1998; 98US-0059625.
 XX
 XX (UYNE-) UNIV NEW JERSEY.
 XX
 XX Moyle WR;
 XX
 XX WPI; 1999-620431/53.
 XX
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 PS Example 6; Fig 19; 73pp; English.
 XX
 CC This sequence is a fusion protein of HCG and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-termini of both subunits or the N-terminus of the
 CC the products to form heterodimers (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX
 SQ Sequence 273 AA;
 Query Match 99.1%; Score 770; DB 20; Length 273;
 Best Local Similarity 100.0%; Pred.No. 3.4e-62;
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLPRCPRIINATLAVEKGGPCVITVNTTICAGTCPTMTVRVLSQVLPALPQVWYNR 61
 DB 129 SKEPLPRCPRIINATLAVEKGGPCVITVNTTICAGTCPTMTVRVLSQVLPALPQVWYNR 188
 QY 62 DYRFESIRLPGCPGVNPNVSVYAVALSQCACALCRSTTDCGPKDHLTCDDPRQDSSS 121
 DB 189 DYRFESIRLPGCPGVNPNVSVYAVALSQCACALCRSTTDCGPKDHLTCDDPRQDSSS 248
 QY 122 SKAPPPSLPSPRLPGSDT 141
 DB 249 SKAPPPSLPSPRLPGSDT 268

RESULT 27
AAW47473
ID AAW47473 standard; Protein; 165 AA.
XX
AC AAW47473;
XX
DT 23-SEP-1998 (first entry)
XX
DE Human beta-hCG protein.
XX
KW Beta-human chorionic gonadotropin; beta-hCG; hematopoietic cell;
KW treatment; proliferation; human immunodeficiency virus; HIV; tumour;
KW idiopathic thrombocytopenia purpura; anaemia; neutropenia;
KW chemotherapy; radiation; autoimmune disease; genetic disorder.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Peptide 1..20
FT /label= signal
FT Protein 21..165
FT /label= beta-hCG
XX
XX W09749418-AL.
XX
PD 31-DEC-1997.
XX
XX 24-JUN-1997; 97MO-US11209.
XX
XX 09-SEP-1996; 96US-0709924.
XX
XX 24-JUN-1996; 96US-0669654.
XX
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.
XX
XX Bryant J, Gallo RC, Lunardi-Iskandar Y;
XX WPI: 1998-076906/07.
XX N-PSDB; AAV18517.
XX
XX Treating or preventing disease by increasing production of
XX hematopoietic cells - using human chorionic gonadotropin or its
XX fragments or derivatives, in vivo or in vitro, e.g. in cases of HIV
XX infection, anaemia etc.
XX
XX Claim 7; Fig 4; 162pp; English.
XX
XX This sequence represents the beta subunit of human chorionic gonadotropin
XX which is used in a method for the treatment or prevention of disease, by
XX the method of increasing the production of hematopoietic cells. The
XX method is also described in which one or more different types of A
XX hematopoietic cells are treated in vitro to increase proliferation
XX then returned to the patient. The method is specified for treating human
XX immunodeficiency virus (HIV) infection, idiopathic thrombocytopenia
XX purpura, anaemia or neutropenia, or subjects who have undergone
XX chemotherapy or radiation treatment. More generally it can be used to
XX treat a wide range of conditions involving hematopoietic failure, (non-)
XX hematopoietic tumours, autoimmune disease and genetic disorders (using a
XX transformed hematopoietic cell). The in vitro method can also be used to
XX expand hematopoietic cells for subsequent therapeutic use.
XX
XX Sequence. 165 AA;
XX
XX Query Match 98.7%; Score 767; DB 19; Length 165;
XX Best Local Similarity 99.3%; Pred. No. 3.8e-62;
XX Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
XX
XX 2 SKEPLRRCRPIINATLAVKEGCPVCTVTNTTCAGCTPTMTLVQVLPALPQVVCNVR 61
XX
XX 21 SKEPLRRCRPIINATLAVKEGCPVCTVTNTTCAGCTPTMTLVQVLPALPQVVCNVR 80
XX
XX 62 DVRFESIRLPGCPGPNVSVYVALSCQALCRRTTDCGGPKDHPDPTCDPRFQDSSS 121
XX
XX 81 DVRFESIRLPGCPGPNVSVYVALSCQALCRRTTDCGGPKDHPDPTCDPRFQDSSS 140
XX
XX 122 SKAPPSLPSPRLPGPSDT 141
XX
XX 141 SKAPPSLPSPRLPGPSDT 160

OY 122 SKAPPSLPSPRLPGPSDT 141
DB 141 SKAPPSLPSPRLPGPSDT 160
RESULT 28
AAW33639
ID AAW33639 standard; Protein; 165 AA.
XX
AC AAW33639;
XX
DT 26-JUN-1998 (first entry)
XX
DE Human chorionic gonadotropin beta-chain.
XX
KW Beta-chain; human; chorionic gonadotropin; beta-hCG; inhibition;
KW human chorionic gonadotropin; beta-hCG; HIV; infection; replication;
KW Kaposi's sarcoma; hematopoiesis.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Peptide 1..20
FT /label= slg_peptide
FT Peptide 21..165
FT /label= mat_peptide
XX
XX W09749373-A2.
XX
XX 31-DEC-1997.
XX
XX 24-JUN-1997; 97MO-US11202.
XX
XX 09-SEP-1996; 96US-0709948.
XX
XX 24-JUN-1996; 96US-0669681.
XX
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.
XX
XX Bryant J, Gallo RC, Lunardi-Iskandar Y;
XX WPI: 1998-076887/07.
XX N-PSDB; AAV04780.
XX
XX Human chorionic gonadotropin peptide derivatives - are active in
XX inhibiting, e.g. HIV infection or replication, Kaposi's Sarcoma or
XX have pro-hematopoietic activity
XX
XX Claim 1; Page 101; 174pp; English.
XX
XX The present sequence is the beta-chain of human chorionic
XX gonadotropin (beta-hCG), peptide derivatives of which are active
XX in inhibiting, e.g. HIV infection or replication or Kaposi's
XX sarcoma, or have pro-hematopoietic activity.
XX
XX Sequence 165 AA;
XX
XX Query Match 98.7%; Score 767; DB 19; Length 165;
XX Best Local Similarity 99.3%; Pred. No. 3.8e-62;
XX Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
XX
XX 2 SKEPLRRCRPIINATLAVKEGCPVCTVTNTTCAGCTPTMTLVQVLPALPQVVCNVR 61
XX
XX 21 SKEPLRRCRPIINATLAVKEGCPVCTVTNTTCAGCTPTMTLVQVLPALPQVVCNVR 80
XX
XX 62 DVRFESIRLPGCPGPNVSVYVALSCQALCRRTTDCGGPKDHPDPTCDPRFQDSSS 121
XX
XX 81 DVRFESIRLPGCPGPNVSVYVALSCQALCRRTTDCGGPKDHPDPTCDPRFQDSSS 140
XX
XX 122 SKAPPSLPSPRLPGPSDT 141
XX
XX 141 SKAPPSLPSPRLPGPSDT 160

```

RESULT 29
AAW33637
ID AAW33637 standard; Protein; 165 AA.
AC
XX
XX AAW33637;
XX
XX
XX 26-JUN-1998 (first entry)
XX
XX Human chorionic gonadotropin beta-chain.
XX
XX Beta-chain; human; chorionic gonadotropin; beta-hCG; treatment;
XX prevention; wasting syndrome; viral infection; cancer;
XX chronic cardiovascular disease; chemotherapy;
XX radiation therapy.
XX
XX Homo sapiens.
XX
XX Key Location/Qualifiers
XX Peptide 1..20
XX /label= sig_peptide
XX Peptide 21..165
XX /label= mat_peptide
XX
XX W09749721-A1.
XX
XX 31-DEC-1997.
XX
XX 24-JUN-1997; 97WO-US11448.
XX
XX 09-SEP-1996; 96US-0709913.
XX
XX 24-JUN-1996; 96US-0669675.
XX
XX (UTMA-) UNIV MARYLAND BIOTECHNOLOGY INST.
XX
XX Bryant J, Gallo RC, Lunardi-Ikandar Y;
XX
XX WPI; 1998-077106/07.
XX
XX N-PSDB; AAW04779.
XX
XX Treating or preventing wasting syndrome - by administration of human
XX chorionic gonadotropin, beta-hCG, peptides or derivatives of these
XX
XX Claim 8; Page 69; 126pp; English.
XX
XX The present sequence is the beta-chain of human chorionic
XX gonadotropin (beta-hCG), peptide derivatives of which can be used
XX to treat or prevent a wasting syndrome associated with viral
XX infection, e.g. human immunodeficiency syndrome virus infection,
XX cancer, chronic cardiovascular disease, chemotherapy or radiation
XX therapy.
XX
XX Sequence 165 AA:
XX
Query Match 98.74; Score 167; DB 19; Length 165;
Best Local Similarity 99.34; Pred. No. 3.8e-62;
Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTMTVRLQGVLPALPQVVCNHR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTMTVRLQGVLPALPQVVCNHR 80
QY 62 DVRFESIRLPGCPGRLNPNVSTAVALSQCQALCRSTTDCGGPKDHPDTCODRPFQSSS 121
DB 81 DVRFESIRLPGCPGRLNPNVSTAVALSQCQALCRSTTDCGGPKDHPDTCODRPFQSSS 140
QY 122 SKAPPPSLPSPRLPGSDT 141
DB 141 SKAPPPSLPSPRLPGSDT 160
RESULT 30
AAW99530
ID AAW99530 standard; Protein; 145 AA.
AC
XX
XX AAW99530;
XX
XX 08-JUN-1999 (first entry)
XX
XX Human chorionic gonadotropin beta subunit.
XX
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;
XX stability; primer; amplification; PCR; mutation.
XX
XX Homo sapiens.
XX
XX Key Location/Qualifiers
XX Disulfide-bond 9..90
XX Disulfide-bond 91..112
XX Disulfide-bond 113..110
XX Disulfide-bond 14..88
XX Disulfide-bond 38..57
XX Disulfide-bond 93..100
XX
XX W09858957-A2.
XX
XX 30-DEC-1998.
XX
XX 25-JUN-1998; 98WO-US13070.
XX
XX 25-JUN-1997; 97US-0050784.
XX
XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
XX
XX (MCIN-) MCINNIS P G.
XX
XX Moyle WR;
XX
XX WPI; 1999-081219/07.
XX
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX and hTSH have been found to form a disulphide crosslink between the
XX alpha- and beta-subunits to improve stability
XX
XX Disclosure; Fig 2B; 139pp; English.
XX
XX The invention relates to the production of analogues of a heterodimeric
XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX (hCG), human luteinising hormone (hLH), human follicle stimulating
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX proteins, which are modified to contain an intersubunit disulphide bond,
XX between an alpha-subunit cysteine and a beta-subunit cysteine. Part of the
XX invention relates to the use of the modified GPHs as agonists of the
XX bioactivity for the corresponding native GPH receptor. This sequence
XX represents the wild type hCG-beta subunit used for the generation of the
XX modified GPHs. The improved analogues are designed specifically
XX to reduce perturbation of the 3-dimensional structure of the hormone,
XX thereby creating greater likelihood that the dimer will be formed in vivo
XX and the formed dimer will have affinity for the native receptors and have
XX agonistic activity on them. The changes stabilise the GPHs and prolong
XX the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX
XX Sequence 145 AA:
XX
Query Match 98.64; Score 766; DB 20; Length 145;
Best Local Similarity 98.64; Pred. No. 4.1e-62;
Matches 138; Conservative 2; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTMTVRLQGVLPALPQVVCNHR 61
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTMTVRLQGVLPALPQVVCNHR 60
QY 62 DVRFESIRLPGCPGRLNPNVSTAVALSQCQALCRSTTDCGGPKDHPDTCODRPFQSSS 121

```

DB 61 DVFESIRLPGCPGVNPNVSVAVASCALCRSTTDCGGPKDHPPLTCDPFRQDSSS 120
 QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 121 SKAPPSLPSPSLRPGSDT 140
 RESULT 31
 AAM99508
 ID AAM99508 standard; Protein: 165 AA.
 XX
 AC AAM99508;
 DT 08-JUN-1999 (first entry)
 XX
 XX Glycoprotein hormone analogue HCG-beta-A35C.
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer; amplification; PCR; mutation.
 XX
 OS Homo sapiens.
 OS Synthetic.
 XX
 PN W09858957-A2.
 XX
 PD 30-DEC-1998.
 XX
 PF 25-JUN-1998; 98MO-US13070.
 XX
 PR 25-JUN-1997; 97US-0050784.
 XX
 PA (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX
 PI Moyle WR;
 XX
 WPI: 1999-081219/07.
 XX
 PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX
 PS Example 12; Page 89; 139pp; English.
 XX
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH) (e.g. human chorionic gonadotropin
 CC (hCG), human chorionic gonadotropin (hLH), human chorionic gonadotropin
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH) and functional
 CC muteins, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC and the formed dimer will have affinity for the native receptors and have
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX
 SQ Sequence 165 AA;
 Query Match 98.6%; Score 766; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 4.6e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLAPRCRFINATLAVKEGCPVITVNTTICAGTCPTMTRVLOGVLPALPQVVCNTR 61
 DB 21 SKEPLAPRCRFINATLAVKEGCPVITVNTTICAGTCPTMTRVLOGVLPALPQVVCNTR 80

QY 62 DVFESIRLPGCPGVNPNVSVAVASCALCRSTTDCGGPKDHPPLTCDPFRQDSSS 121
 DB 81 DVFESIRLPGCPGVNPNVSVAVASCALCRSTTDCGGPKDHPPLTCDPFRQDSSS 140
 QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 141 SKAPPSLPSPSLRPGSDT 160
 RESULT 32
 AAY57315
 ID AAY57315 standard; Protein: 176 AA.
 XX
 AC AAY57315;
 DT 19-JUN-2000 (first entry)
 XX
 XX human betahCG/beta-gal fusion protein.
 DE human chorionic gonadotropin; hCG; betahCG; vaccine; chitosan;
 KW infertility; betahCG/beta-gal; fusion protein.
 XX
 OS Homo sapiens.
 XX
 PN W0200015253-A1.
 XX
 PD 23-MAR-2000.
 XX
 PF 16-SEP-1999; 99MO-US21591.
 XX
 PR 17-SEP-1998; 98US-0100766.
 XX
 PA (ZONA-) ZONAGEN INC.
 XX
 PI Harris J, Martinez M;
 XX WPI: 2000-271358/23.
 XX
 DR N-PSDB; AAZ90609.
 XX
 PT Novel human beta-subunit chorionic gonadotropin vaccines used to
 PT interrupt fertility in mammals by the immunological inactivation of the
 PT pregnancy hormone chorionic gonadotropin -
 XX
 PS Claim 5; Page 32-33; 39pp; English.
 XX
 CC The invention provides novel vaccine compositions which comprise the
 CC beta-subunit of human chorionic gonadotropin (betahCG) in combination
 CC with chitosan-based adjuvants. The vaccines are used to induce
 CC an immune response against the chorionic gonadotropin hormone. The
 CC compositions are also used for antibody production. The vaccines comprise
 CC a well-tolerated chitosan-based adjuvant which induces the production of
 CC anti-chorionic gonadotropin antibodies without inducing the side effects
 CC (e.g. hypersensitivity, erythema, etc.) associated with other adjuvants.
 CC The vaccine also overcomes the problem of non-responsiveness in some
 CC individuals. The present sequence represents a betahCG/beta-gal fusion
 CC protein consisting of leaderless betahCG linked to a beta-gal fragment.
 XX
 SQ Sequence 176 AA;
 Query Match 98.6%; Score 766; DB 21; Length 176;
 Best Local Similarity 100.0%; Pred. No. 5e-62; 0;
 Matches 139; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 3 KEPLAPRCRFINATLAVKEGCPVITVNTTICAGTCPTMTRVLOGVLPALPQVVCNTR 62
 DB 26 KEPLAPRCRFINATLAVKEGCPVITVNTTICAGTCPTMTRVLOGVLPALPQVVCNTR 85
 QY 63 VRESIRLPGCPGVNPNVSVAVASCALCRSTTDCGGPKDHPPLTCDPFRQDSSS 122
 DB 86 VRESIRLPGCPGVNPNVSVAVASCALCRSTTDCGGPKDHPPLTCDPFRQDSSS 145
 QY 123 KAPPSLPSPSLRPGSDT 141

Db 146 KAPPPSLPSPRLPGPSDT 164

RESULT 33
AAV57316
ID AAY57316 standard; Protein: 252 AA.
XX
AC AAY57316;
XX
DT 19-JUN-2000 (first entry)
XX
DE Alpha-mating factor fragment/betahCG fusion protein.
XX
KW Human chorionic gonadotropin; hCG; betahCG; vaccine; chitosan;
XX
WV infertility; betahCG/beta-gal; fusion protein.
XX
OS Homo sapiens.
XX
PN MO200015253-A1.
XX
PD 23-MAR-2000.
XX
PF 16-SEP-1999; 99WO-US21591.
XX
PR 17-SEP-1998; 98US-0100766.
XX
PA (ZONA-) ZONAGEN INC.
XX
PI Harris J. Martinez M;
XX
DR NPI; 2000-271258/23.
XX
DR N-PSDB: AA290610.
XX
PT Novel human beta-subunit chorionic gonadotropin vaccines used to
PT interrupt fertility in mammals by the immunological inactivation of the
PT pregnancy hormone chorionic gonadotropin.
XX
PS Claim 5; Page 34-35; 39pp; English.
XX
CC The invention provides novel vaccine compositions which comprise the
CC beta-subunit of human chorionic gonadotropin (betahCG) in combination
CC with chitosan-based adjuvants. The vaccines are used to induce
CC infertility especially transient infertility, in female mammals. The
CC compositions are also used for antibody production. The vaccines comprise
CC a well-tolerated chitosan-based adjuvant which induces the production of
CC anti-chorionic gonadotropin antibodies, without inducing the side effects
CC of hypersensitivity, erythema, etc.) associated with other adjuvants.
CC The vaccines also induce a strong immune response in some
CC individuals. The present sequence represents a betahCG fragment
CC fused to an alpha-mating factor leader sequence at the N-terminus.
XX
SQ Sequence 252 AA;

Query Match 98.6%; Score 766; DB 21; Length 252;
Best Local Similarity 100.0%; Pred. No. 7.2e-62;
Matches 139; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 3 KEPLAPRCPRINATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNTR 62
DB 101 KEPLAPRCPRINATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNTR 160
QY 63 VRFESIRLPCRGVNVVYVAVALSQCACLCRSTTDCGPKDHPHTCDDPREFQSSSS 122
DB 161 VRFESIRLPCRGVNVVYVAVALSQCACLCRSTTDCGPKDHPHTCDDPREFQSSSS 220
QY 123 KAPPPSLPSPRLPGPSDT 141
DB 221 KAPPPSLPSPRLPGPSDT 239

RESULT 34
AAR15171
ID AAR15171 standard; Protein: 145 AA.

XX AAR15171;
AC
DT 11-FEB-1992 (first entry)
XX
DE hCG methionine substitution mutant, G3.
XX
KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX
OS Homo sapiens.
XX
PN MO9116922-A.
XX
PD 14-NOV-1991.
XX
PF 07-MAY-1991; 91WO-US03162.
XX
PR 08-MAY-1990; 90US-0520703.
XX
PA (UYNE-) UNIV MED NEW JERSEY.
XX
PI Campbell RK, Moyle WR;
XX
DR WPI; 1991-353528/48.
XX
PT New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragative vaccines.
XX
PS Table VIII; Page 67; 94pp; English.
XX
CC The sequence is an analogue of mature hCG beta subunit having
CC residue 89 replaced by a methionine residue. This introduces an
CC additional cleavage site for CNBR, useful for determining the
CC disulphide bonds. This can be used to show that mutagenesis has
CC not altered the "normal" disulphide pattern of analogues, and for
CC examining protein folding.
XX
CC See AAR15043, AAR15061 R15125 and AAR15161-R15198.
XX
SQ Sequence 145 AA;

Query Match 98.5%; Score 765; DB 12; Length 145;
Best Local Similarity 99.3%; Pred. No. 5e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLAPRCPRINATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNTR 61
DB 1 SKEPLAPRCPRINATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNTR 60
QY 62 DVRFESIRLPCRGVNVVYVAVALSQCACLCRSTTDCGPKDHPHTCDDPREFQSSSS 121
DB 61 DVRFESIRLPCRGVNVVYVAVALSQCACLCRSTTDCGPKDHPHTCDDPREFQSSSS 120

QY 122 SKAPPPSLPSPRLPGPSDT 141
DB 121 SKAPPPSLPSPRLPGPSDT 140

RESULT 35
AAR15172
ID AAR15172 standard; Protein: 145 AA.
XX
AC AAR15173;
XX
DT 11-FEB-1992 (first entry)
XX
DE hCG histidine substitution mutant, G5.
XX
KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX
OS Homo sapiens.
XX
PN MO9116922-A.

```

XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UTNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-35328/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX Table VIII; Page 67; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residue 37 replaced by a histidine residue. This introduces an
XX additional cleavage site for CNBr, useful for determining the
XX disulphide bonds. This can be used to show that mutagenesis has
XX not altered the 'normal' disulphide pattern of analogues, and for
XX examining protein folding.
XX See ARI15043, ARI15061-R15125 and ARI15161-R15198.
XX Sequence 145 AA;

Query Match          98.5%; Score 765; DB 12; Length 145;
Best Local Similarity 99.3%; Pred. No. 5e-62;
Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVLOGLPALPQVVCNVR 61
DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGHCPMTVRVLOGLPALPQVVCNVR 60
OY 62 DVFRESIRLPCPGNPNVSVYVALSCCALCRSTTDCGGPKDHPFLCDDPRQDSSS 121
DB 61 DVFRESIRLPCPGNPNVSVYVALSCCALCRSTTDCGGPKDHPFLCDDPRQDSSS 120
OY 122 SKAPPPSLPSRLPGPSDT 141
DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 36
AAW9514
ID AAW9514 standard; Protein; 165 AA.
AC AAW9514;
XX 08-JUN-1999 (first entry)
XX Glycoprotein hormone analogue hCG-beta-V44C.
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;
XX stability; primer; amplification; PCR; mutation.
XX Homo sapiens.
XX OS
XX Synthetic.
XX WO9858957-A2.
XX 30-DEC-1998.
XX 25-JUN-1998; 98WO-US13070.
XX 25-JUN-1997; 97US-0050784.
XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.

PA (MCIN-) MCINNIS P G.
XX Moyle WR;
XX WPI: 1999-081219/07.
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX hTSH - have an intersubunit disulphide crosslink between the
XX alpha- and beta-subunits to improve stability.
XX Example 12; Page 89; 139pp; English.
XX The invention relates to the production of analogues of a heterodimeric
XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX (hCG), human luteinising hormone (hLH), human follicle stimulating
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX proteins, which are modified to contain an intersubunit disulphide bond,
XX between an alpha-subunit cysteine and a beta-subunit cysteine, or
XX between an alpha-subunit cysteine and a beta-subunit cysteine, for
XX bioactivity for the corresponding native GPH receptor. This sequence
XX represents a mutated hCG-beta subunit used for the generation of the
XX modified GPHs. The improved analogues are designed specifically to
XX reduce perturbation of the 3-dimensional structure of the hormone,
XX thereby creating greater likelihood that the dimer will be formed in vivo
XX and the formed dimer will have affinity for the native receptors and have
XX agonistic activity on them. The changes stabilise the GPHs and prolong
XX the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX Sequence 165 AA;

Query Match          98.5%; Score 765; DB 20; Length 165;
Best Local Similarity 99.3%; Pred. No. 5.7e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVLOGLPALPQVVCNVR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPMTVRVLOGLPALPQVVCNVR 80
OY 63 DVFRESIRLPCPGNPNVSVYVALSCCALCRSTTDCGGPKDHPFLCDDPRQDSSS 121
DB 81 DVFRESIRLPCPGNPNVSVYVALSCCALCRSTTDCGGPKDHPFLCDDPRQDSSS 140
OY 122 SKAPPPSLPSRLPGPSDT 141
DB 141 SKAPPPSLPSRLPGPSDT 160

RESULT 37
AAW9507
ID AAW9507 standard; Protein; 165 AA.
AC AAW9507;
XX 08-JUN-1999 (first entry)
XX Glycoprotein hormone analogue hCG-beta-V56C.
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;
XX stability; primer; amplification; PCR; mutation.
XX Homo sapiens.
XX OS
XX Synthetic.
XX WO9858957-A2.
XX 30-DEC-1998.
XX 25-JUN-1998; 98WO-US13070.
XX 25-JUN-1997; 97US-0050784.
XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.

```

XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX Example 12: Page 89; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin
 CC (hCG), human luteinizing hormone (LH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC and the formed dimer will be formed in vivo
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX Sequence 165 AA:

Query Match 98.5%; Score 765; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 5.7e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGTCPTMTVRVLOGVLPALPOVCCNR 61
 DB 21 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGTCPTMTVRVLOGVLPALPOVCCNR 80
 QY 62 DVRFESIRLPGCRGPNVPSYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 121
 DB 81 DVRFESIRLPGCRGPNVPSYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 140
 QY 122 SKAPPSLPSRSLPGPSDT 141
 DB 141 SKAPPSLPSRSLPGPSDT 160

RESULT 38
 AAW99509
 ID AAW99509 standard; Protein: 165 AA.
 XX AAW99509;
 AC AAW99509;
 DT 08-JUN-1999 (first entry)
 XX Glycoprotein hormone analogue hCG-beta-133C.
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 XX human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 PN W09858957-A2.
 XX W09858957-A2.
 PD 30-DEC-1998.
 XX 30-DEC-1998.
 PF 25-JUN-1998; 98WO-0513070.

XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX Example 12: Page 89; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin
 CC (hCG), human luteinizing hormone (LH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC and the formed dimer will be formed in vivo
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX Sequence 165 AA:

Query Match 98.5%; Score 765; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 5.7e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGTCPTMTVRVLOGVLPALPOVCCNR 61
 DB 21 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGTCPTMTVRVLOGVLPALPOVCCNR 80
 QY 62 DVRFESIRLPGCRGPNVPSYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 121
 DB 81 DVRFESIRLPGCRGPNVPSYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 140
 QY 122 SKAPPSLPSRSLPGPSDT 141
 DB 141 SKAPPSLPSRSLPGPSDT 160

RESULT 39
 AAR15169
 ID AAR15169 standard; Protein: 145 AA.
 XX AAR15169;
 AC AAR15169;
 DT 11-FEB-1992 (first entry)
 XX hCG methionine substitution mutant, G1.
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
 KW stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 PN W09116922-A.
 XX W09116922-A.
 PD 14-NOV-1991.
 XX 14-NOV-1991.
 PF 07-MAY-1991; 91WO-US03162.
 XX 07-MAY-1991; 91WO-US03162.
 PF 08-MAY-1990; 90US-0520703.

(UTNE-) UNIV MED NEW JERSEY.
Campbell RK, Moyle WR;
WPI: 1991-353528/48.

New glyco-protein hormone analogues - for inducing fertility as
amuno-castration agents, for suppressing reproductive system
development and as immuno-contragestive vaccines.

Table VIII; Page 67; 94pp; English.

The sequence is an analogue of mature hCG beta subunit having
residues 12 and 27 replaced by methionine residues. This
introduces additional cleavage sites for CNBR, useful for
determining the disulphide bonds. This can be used to show that
autogenesis has not altered the "normal" disulphide pattern of
mature hCG and that the protein produced is identical to hCG.
See AAR15043, AAR15061-R15125 and AAR15161-R15198.

Sequence 145 AA:

Query Match 98.3%; Score 764; DB 12; Length 145;
Best Local Similarity 98.6%; Pred. No. 6.2e-62;
Matches 136; Conservative : 2; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRRCPPNNTAAVEKSGPCVINTTICAGYCPMTVRVLCGLPALPQVCNTR 61
DB 1 SKEPLRRCPPNNTAAVEKSGPCVKTNTTTCAGYCPTMTRVLCGLPALPQVCNTR 60

QY 62 DVAFESIELGCGPGVNPVSVAALSCQCALCRSTTDCGGPKDHPLTCDPRFDSSS 121
DB 61 DVAFESIELGCGPGVNPVSVAALSCQCALCRSTTDCGGPKDHPLTCDPRFDSSS 120

QY 127 SKAPPSLSPSRLPGSDT 141
DB 121 SKAPPSLSPSRLPGSDT 140

RESULT 40
AAR30999
ID AAR30999 standard; protein; 145 AA.
NA AAR30999;
XX DT 14-MAY-1993 (first entry)
DE Human chorionic gonadotrophin beta-subunit.
KW hCG; glycoprotein hormone analogue; human infertility; LH; FSH;
RW luteinising hormone receptor; follicle stimulating hormone receptor;
OS veratrine; polycystic ovarian disease.
XX Homo sapiens..
PN W09222568-A.
PD 23-DEC-1992.
PF 18-JUN-1992; 9ZWO-US05207.
PF 18-JUN-1991; 9IUS-0717151.
PA (UTNE-) UNIV NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1993-018070/02.

New alpha, beta-hetero:dimeric polypeptide derivs. - which bind to
luteinizing and follicle stimulating hormone receptors, useful for
controlling the ratio of FSH to LH activity

XX This protein sequence represents the beta-subunit of human chorionic
 CC gonadotropin (hCG) which can be used in a novel method for detecting
 CC reproductive cancers and associated tumours. hCG is a dimeric
 CC glycoprotein consisting of two subunits, alpha and beta. The alpha
 CC subunit is common to all glycoproteins and is also associated with the
 CC pregnancy testing however it is also associated with the alpha
 CC reproductive tumours in both men and women. The hCG beta-subunit can
 CC be cleaved by gonadotropin beta-subunit nicking enzyme (GBNE) which is
 CC an arginine specific metalloprotease capable of cleaving the hCG beta
 CC subunit at Arg44 or Gly47, but is partially inhibited by phenanthroline
 CC or leupeptin. Over 90 per cent of cancer patients show elevated levels of
 CC GBNE in their blood, therefore, specific binding assays for the presence
 CC of GBNE are useful in the detection and prognosis of cervical,
 CC endometrial, ovarian, prostate, testicular, tubal, uterine, vaginal or
 CC uterine cancer. GBNE can act as a marker for high risk screening tests, the
 CC difficulty of diagnosis of early stage malignant cancers and can also be
 CC used to follow therapy for the treatment of known reproductive cancers.
 XX Sequence 145 AA:

Query Match 98.3%; Score 764; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 6.2e-62;
 Matches 138; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

Qy 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPTRVLOGVLPALPOVVCNVR 61
 Db 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPTRVLOGVLPALPOVVCNVR 60

Qy 62 DYRFESIRLPGCPGVNPNVYVAVALSCCALCKRRSTTDCGGPKDHPKLTCDPRFDQSSS 121
 Db 61 DYRFESIRLPGCPGVNPNVYVAVALSCCALCKRRSTTDCGGPKDHPKLTCDPRFDQSSS 120

Qy 122 SKAPPSLPSPSLRPGSDT 141
 Db 121 SKAPPSLPSPSLRPGSDT 140

RESULT 42
 AAW99512
 ID AAW99512 standard; Protein: 165 AA.
 AC AAW99512;
 DT 08-JUN-1999 (first entry)
 XX Glycoprotein hormone analogue hCG-beta-T42C.
 XX Analogue: heterodimeric; glycoprotein hormone: hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer: amplification; PCR; mutation.
 OS Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 XX 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 XX or hTSH, have an intersubunit disulphide crosslink between the
 XX alpha- and beta-subunits to improve stability

XX Example 12; Page 89; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 CC glycoprotein hormone (hCG) e.g. human chorionic gonadotropin
 CC (hCG), human thyroid stimulating hormone (hTSH), and functional
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer is more likely to be stable. The analogues have
 CC enhanced activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX Sequence 165 AA:

Query Match 98.3%; Score 764; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

Qy 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPTRVLOGVLPALPOVVCNVR 61
 Db 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPTRVLOGVLPALPOVVCNVR 80

Qy 62 DYRFESIRLPGCPGVNPNVYVAVALSCCALCKRRSTTDCGGPKDHPKLTCDPRFDQSSS 121
 Db 81 DYRFESIRLPGCPGVNPNVYVAVALSCCALCKRRSTTDCGGPKDHPKLTCDPRFDQSSS 140

Qy 122 SKAPPSLPSPSLRPGSDT 141
 Db 141 SKAPPSLPSPSLRPGSDT 160

RESULT 43
 AAW99506
 ID AAW99506 standard; Protein: 165 AA.
 AC AAW99506;
 DT 08-JUN-1999 (first entry)
 XX Glycoprotein hormone analogue hCG-beta-W41C.
 XX Analogue: heterodimeric; glycoprotein hormone: hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer: amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 XX 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH

PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX
 PS Example 12; Page 89; 139pp; English.
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain at least one disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC as compared to the native hormone. The analogues stabilise the GPHs and have
 CC agonistic activity on them. The analogues stabilise the GPHs and have
 CC as for the native GPHs.
 XX
 SQ Sequence 165 AA;

Query Match 98.3%; Score 764; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVKSGCPVCTVNTTCAGYCPTRVLOGVLPALPQVNCNR 61
 DB 21 SKEPLRRCRPNATLAVKSGCPVCTVNTTCAGYCPTRVLOGVLPALPQVNCNR 80
 QY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDPLTCDPFRQDSSS 121
 DB 81 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDPLTCDPFRQDSSS 140
 QY 122 SKAPPSLPSRLPGPSDT 141
 DB 141 SKAPPSLPSRLPGPSDT 160

RESULT 44
 AAW99510
 ID AAW99510 standard; Protein: 165 AA.
 XX
 AC AAW99510;
 DT 08-JUN-1999 (first entry)
 DE Glycoprotein hormone analogue hCG-beta-798C.
 KW Analogue: heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer; amplification; PCR; mutation.
 OS Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 PD 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 PI WPI: 1999-081219/07.
 DR

XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX
 PS Example 12; Page 89; 139pp; English.
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain at least one intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutated hCG-beta subunit used for the generation of the
 CC modified GPHs. The improved analogues are designed specifically to
 CC reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC as compared to the native hormone. The analogues stabilise the GPHs and have
 CC agonistic activity on them. The analogues stabilise the GPHs and have
 CC as for the native GPHs.
 XX
 SQ Sequence 165 AA;

Query Match 98.3%; Score 764; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVKSGCPVCTVNTTCAGYCPTRVLOGVLPALPQVNCNR 61
 DB 21 SKEPLRRCRPNATLAVKSGCPVCTVNTTCAGYCPTRVLOGVLPALPQVNCNR 80
 QY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDPLTCDPFRQDSSS 121
 DB 81 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDPLTCDPFRQDSSS 140
 QY 122 SKAPPSLPSRLPGPSDT 141
 DB 141 SKAPPSLPSRLPGPSDT 160

RESULT 45
 AAW99511
 ID AAW99511 standard; Protein: 165 AA.
 XX
 AC AAW99511;
 DT 08-JUN-1999 (first entry)
 DE Glycoprotein hormone analogue hCG-beta-T40C.
 KW Analogue: heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer; amplification; PCR; mutation.
 OS Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 PD 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 PI WPI: 1999-081219/07.
 DR

XX WPI; 1999-081219/07.
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
PT or hTSH, and have an intersubunit disulphide crosslink between the
PT alpha- and beta-subunits to improve stability
XX Example 12: Page 89; 139pp; English.
XX The invention relates to the production of analogues of a heterodimeric
CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
CC (hCG), human luteinising hormone (hLH), human follicle stimulating
CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
CC mutants, which are modified to contain an intersubunit disulphide bond,
CC improved stability, the hCG-beta subunit cysteine, for the
CC improved stability, the hCG-beta subunit cysteine, for the
CC bioactivity for the corresponding native GPH receptor. This sequence
CC represents a mutated hCG-beta subunit used for the generation of the
CC modified GPHs. The improved analogues are designed specifically to
CC reduce perturbation of the 3-dimensional structure of the hormone,
CC thereby creating greater likelihood that the dimer will be formed in vivo
CC and the formed dimer will have affinity for the native receptors and have
CC agonistic activity on them. The changes stabilise the GPHs and prolong
CC the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX Sequence 165 AA:
SQ

Query Match 98.3%; Score 764; DB 20; Length 165;
Best Local Similarity 99.3%; Pred. No. 7.1e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTVRVLOGLPALPQVWYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTVRVLOGLPALPQVWYR 80
OY 62 DYRESIRLPGCPGPNVYVAVALSQCALCRSTDCGPKDHPHLCDDPRFQSSS 121
DB 81 DYRESIRLPGCPGPNVYVAVALSQCALCRSTDCGPKDHPHLCDDPRFQSSS 140
OY 122 SKAPPPSLPSPRLPGSDT 141
DB 141 SKAPPPSLPSPRLPGSDT 160

RESULT 46
AAU04613
XX AAU04613 standard; Protein: 181 AA.
XX AAU04613;
XX 23-OCT-2001 (first entry)
XX Gonadotropin analogue, beta subunit
XX Human: glycoprotein hormone: infertile; in vivo fertilisation;
XX single chain gonadotropin.
XX Homo sapiens.
XX US6242580-B1.
XX 05-JUN-2001.
XX 31-MAR-1999; 9905-0282357.
XX 25-AUG-1997; 9705-0918288.
XX 18-FEB-1994; 9405-0199382.
XX 12-AUG-1994; 9405-0289396.
XX 22-SEP-1994; 9405-0310590.
XX 04-NOV-1994; 9405-0314628.
XX 07-DEC-1994; 9405-0351591.
XX 07-JUN-1995; 9505-0475049.

PR 09-MAY-1997; 9705-0853524.
XX (UNITW) UNIV WASHINGTON.
XX Boime I, Moyle WR;
XX WPI; 2001-424301/45.
XX N-PSDB; AAS08507.
XX New single chain forms of the glycoprotein hormone quartet useful for
PT generating antibodies specifically immunoreactive with the new
PT compounds, in treating infertility, or as aids for in vivo
XX fertilization techniques -
XX Example 16; Fig 16; 86pp; English.
XX The sequence represents the amino acid sequence of gonadotropin analogue
CC beta subunit lacking oligosaccharide binding sites. The oligosaccharide
CC binding sites are removed in order to reduce the efficacy of the
CC gonadotropin hormone in the treatment of infertility. The glycoprotein
CC hormone analogue is useful for generating antibodies specifically
CC immunoreactive with new compounds, as a substitute for the heterodimeric
CC forms of the hormones, in the treatment of infertility, as an aid for in
CC vivo fertilization techniques, and in other therapeutic methods
CC associated with the native hormone. The single chain protein is further
CC useful as a reagent in a manner similar to the heterodimeric hormone
CC dimer. The single chain protein is useful for generating antibodies with respect to the
CC native proteins in the biological samples, as a control reagent in assay
CC kits for assessing the levels of these hormones in various samples, and
CC in detecting and purifying receptors to which the native hormones bind.
CC The single chain forms of the heterodimers or homodimers have the
CC following advantages over their dimeric forms: they are more stable,
CC problems of recombinant production are reduced since only a single gene
CC is needed to transcribe, translate and process, they provide an alternate
CC form thus permitting fine tuning of activity levels and of in vivo half
CC lives. Single chain forms are unique of activity levels and of in vivo half
CC truncated forms with the activity of the dimer. The single chain proteins
CC are thus preferred to be engineered without disturbing the
CC overall folding of the protein.
XX Sequence 181 AA:
SQ

Query Match 98.3%; Score 764; DB 22; Length 181;
Best Local Similarity 99.3%; Pred. No. 7.8e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTVRVLOGLPALPQVWYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTVRVLOGLPALPQVWYR 80
OY 62 DYRESIRLPGCPGPNVYVAVALSQCALCRSTDCGPKDHPHLCDDPRFQSSS 121
DB 81 DYRESIRLPGCPGPNVYVAVALSQCALCRSTDCGPKDHPHLCDDPRFQSSS 140
OY 122 SKAPPPSLPSPRLPGSDT 141
DB 141 SKAPPPSLPSPRLPGSDT 160

RESULT 47
AAE04485
XX AAE04485 standard; Protein: 181 AA.
XX AAE04485;
XX 04-SEP-2001 (first entry)
XX Human single chain gonadotropin beta-subunit.
XX Human: single chain gonadotropin analog; anti-infertility; drug;
XX peptide therapy; luteinising hormone; LH; follicle stimulating hormone;
XX FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
XX glycoprotein; infertility.

XX Homo sapiens.
OS Synthetic.
XX USG238890-B1.
XX 29-MAY-2001.
XX 25-AUG-1997; 97US-0918288.
XX 18-FEB-1994; 94US-0199382.
XX 12-AUG-1994; 94US-0289396.
XX 22-SEP-1994; 94US-0310590.
XX 04-NOV-1994; 94US-0334628.
XX 07-DEC-1994; 94US-0351591.
XX 07-JUN-1995; 95US-0475049.
XX 09-MAY-1997; 97US-0853524.
XX (UNIV) UNIV WASHINGTON.
XX Boime I, Moyle WR.
XX WPI; 2001-366474/38.
XX N-PSDB; AAD08807.
XX New DNA or RNA encoding single chain protein useful in treating
XX infertility, as aids in vitro fertilization techniques, or other
XX therapeutic methods associated with the native hormones -
XX Example 16; Fig 16; 87pp; English.
XX The invention relates to human single chain forms of the glycoprotein
XX hormone quartet which is an agonist or antagonist of luteinizing hormone
XX (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
XX (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
XX having identical alpha subunits and differing beta subunits. The agonist
XX forms of single chain hormones are used in treating infertility, as aids
XX in vitro fertilization techniques, and other therapeutic methods
XX associated with the native hormones. The single chain hormones are useful
XX in the treatment of male and female infertility as diagnostic tools to
XX detect the presence of antibodies with respect to the hormones in
XX biological samples, as control reagents in assay kits for assessing the
XX levels of these hormones in various samples, in detecting and purifying
XX receptors to which the native hormones bind. The single chain hormones
XX are also used in affinity chromatographic preparation of receptors or
XX antihormone antibodies. They are used as purification tools for
XX isolation of subsequent preparations of these materials and to monitor
XX levels of single chain hormones administered as drugs. The single chain
XX glycoproteins are used to generate antibodies specifically immunoreactive
XX with these new compounds, as substitutes for the heterodimeric forms of
XX hormones. The present sequence is human single chain gonadotropin
XX beta subunit. This beta subunit is used for constructing fusion protein
XX analogs 1a-10a. The analogs serve as useful starting compounds for
XX template directed vaccine design and for the development of hormone-
XX specific vaccines for use in humans.
XX Sequence 181 AA:
Query Match 98.3%; Score 764; DB 22; Length 181;
Best Local Similarity 99.3%; Pred. No. 7.8e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLPRCPRIQATLAVKEGCPVITVTTCAGYCPPTWRLVQGLVLPALPQVYCNTR 61
DB 21 SKEPLPRCPRIQATLAVKEGCPVITVTTCAGYCPPTWRLVQGLVLPALPQVYCNTR 80
QY 62 DVRFESIRLPGCPGVNPNVYVAVALSCCALCRSRRTDCGPKDHPHLCDDPRPDSSS 121
DB 81 DVRFESIRLPGCPGVNPNVYVAVALSCCALCRSRRTDCGPKDHPHLCDDPRPDSSS 140
QY 122 SKAPPSLPSPSLRPGPSDT 141
XX

DB 141 SKAPPSLPSPSLRPGPSDT 160
RESULT 48
AAR15174
XX AAR15174 standard; Protein; 145 AA.
XX AAR15174;
XX 11-FEB-1992 (first entry)
XX hCG histidine substitution mutant, G6.
XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX Homo sapiens.
XX MO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX Table VIII; Page 67; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residue 40 replaced by a histidine residue. This introduces an
XX disulphide bond. This can be used to alter the pattern of analogues, and for
XX not altered the "normal" disulphide pattern of analogues, and for
XX examining protein folding.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX Sequence 145 AA:
Query Match 98.2%; Score 763; DB 12; Length 145;
Best Local Similarity 99.3%; Pred. No. 7.6e-62;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLPRCPRIQATLAVKEGCPVITVTTCAGYCPPTWRLVQGLVLPALPQVYCNTR 61
DB 1 SKEPLPRCPRIQATLAVKEGCPVITVTTCAGYCPPTWRLVQGLVLPALPQVYCNTR 60
QY 62 DVRFESIRLPGCPGVNPNVYVAVALSCCALCRSRRTDCGPKDHPHLCDDPRPDSSS 121
DB 61 DVRFESIRLPGCPGVNPNVYVAVALSCCALCRSRRTDCGPKDHPHLCDDPRPDSSS 120
QY 122 SKAPPSLPSPSLRPGPSDT 141
XX

RESULT 49
AAR15170
XX AAR15170 standard; Protein; 145 AA.
XX AAR15170;
XX 11-FEB-1992 (first entry)
XX hCG methionine substitution mutant, G2.

XX KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.
 XX XS Homo sapiens.
 XX XN
 XX PN W09116922-A.
 XX PD 14-NOV-1991.
 XX PF 07-MAY-1991; 91WO-US03162.
 XX PR 08-MAY-1990; 90US-0520703.
 XX PA (UTNE-) UNIV MED NEW JERSEY.
 XX XI Campbell RK, Moyle WR;
 XX XZ WPI; 1991-353528/48.
 XX XZ
 XX PT New glyco-protein hormone analogues - for inducing fertility as
 XX PT immuno-castration agents, for suppressing reproductive system
 XX PT development and as immuno-contragestive vaccines.
 XX PS Table VIII; Page 67; 94pp: English.
 XX XZ
 XX CC The sequence is an analogue of mature hCG beta subunit having
 XX CC a residual cleavage site for CNBr. This residue introduces an
 XX CC additional cleavage site for CNBr. This residue introduces an
 XX CC disulphide bond. This can be used to show that mutagenesis has
 XX CC not altered the "normal" disulphide pattern of analogues, and for
 XX CC examining protein folding.
 XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX XZ
 XX SQ Sequence 145 AA:
 Query Match 98.1%; Score 762; DB 12; Length 145;
 Seq. Local Similarity 99.3%; Pred. No. 9.4e-62;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 OY 2 SKEPLRPRCPINATLAVEKSGPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNHR 61
 DB 1 SKEPLRPRCPINATLAVEKSGPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNHR 60
 OY 62 DVRESIRLPGCPGVNPNVSTAVALSQCACLRRTTDCGGPKDHPDLPDTPDQSS 121
 DB 61 DVRESIRLPGCPGVNPNVSTAVALSQCACLRRTTDCGGPKDHPDLPDTPDQSS 120
 OY 122 SKAPPSLPSPSLPQSDPT 141
 DB 121 SKAPPSLPSPSLPQSDPT 140
 RESULT 50
 AAW99545
 ID AAW99545 standard; Protein: 165 AA.
 AC AAW99545;
 XX XZ
 XX XZ 08-JUN-1999 (first entry)
 XX DE hCG-beta analogue hCG-beta-R8C.
 XX KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 XX W09858957-A2.
 XX XZ
 XX PD 30-DEC-1998.

XX PF 25-JUN-1998; 98WO-US13070.
 XX PR 25-JUN-1997; 97US-0050784.
 XX XZ
 XX PA (ISFP) ARS APPLIED RES SYSTEMS HOLDING NV.
 XX XZ (ACIN-) MCINNIS F G.
 XX PI Moyle WR;
 XX XZ
 XX DR WPI; 1999-081219/07.
 XX XZ
 XX PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 XX PT or hTSH, have an intersubunit disulphide crosslink between the
 XX PT alpha- and beta-subunits to improve stability
 XX XZ
 XX PS Disclosure; Fig 348; 139pp: English.
 XX XZ
 XX CC The invention relates to the production of analogues of a heterodimeric
 XX CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 XX CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 XX CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 XX CC mutants, which are modified to contain an intersubunit disulphide bond,
 XX CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 XX CC improved stability, the analogue retaining at least a portion of the
 XX CC bioactivity for the corresponding native GPH receptor. This sequence
 XX CC represents a mutant hCG-beta subunit used for the generation of a
 XX CC stable, heterodimeric, glycoprotein hormone analogue. The analogue is used
 XX CC to reduce perturbation of the 3-dimensional structure of the hormone,
 XX CC thereby creating greater likelihood that the dimer will be formed in vivo
 XX CC and the formed dimer will have affinity for the native receptors and have
 XX CC agonistic activity on them. The changes stabilise the GPHs and prolong
 XX CC the biological activities of the hormones. The analogues can have uses
 XX CC as for the native GPHs.
 XX XZ
 XX SQ Sequence 165 AA:
 Query Match 98.1%; Score 762; DB 20; Length 165;
 Seq. Local Similarity 99.3%; Pred. No. 1.1e-61;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 OY 2 SKEPLRPRCPINATLAVEKSGPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNHR 61
 DB 21 SKEPLRPRCPINATLAVEKSGPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNHR 80
 OY 62 DVRESIRLPGCPGVNPNVSTAVALSQCACLRRTTDCGGPKDHPDLPDTPDQSS 121
 DB 81 DVRESIRLPGCPGVNPNVSTAVALSQCACLRRTTDCGGPKDHPDLPDTPDQSS 140
 OY 122 SKAPPSLPSPSLPQSDPT 141
 DB 141 SKAPPSLPSPSLPQSDPT 160
 RESULT 51
 AAW99513
 ID AAW99513 standard; Protein: 165 AA.
 AC AAW99513;
 XX XZ
 XX XZ 08-JUN-1999 (first entry)
 XX DE Glycoprotein hormone analogue hCG-beta-Q46C.
 XX KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 XX W09858957-A2.
 XX XZ
 XX PD W09858957-A2.

```

XX PD 30-DEC-1998.
XX PF 25-JUN-1998; 98MO-US13070.
XX PR 25-JUN-1997; 97US-0050784.
XX PA (ISTF ) ABS APPLIED RES SYSTEMS HOLDING NV.
XX PA (MCIN-) MCINNIS P G.
XX PI MOYLE WR;
XX DR WPI: 1999-081219/07.
XX PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX PT or hTSH, have an intersubunit disulphide crosslink between the
XX PT alpha- and beta-subunits to improve stability
XX PS Example 12; Page 89; 139pp; English.
XX CC The invention relates to the production of analogues of a heterodimeric
XX CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX CC (hCG), human luteinising hormone (hLH), human follicle stimulating
XX CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX CC muteins, which are modified to contain an intersubunit disulphide bond,
XX CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
XX CC improved stability, the analogue retaining at least a portion of the
XX CC reactivity for the corresponding native GPH receptor. This sequence
XX CC is particularly suitable for use in the generation of the
XX CC modified GPHs. The improved analogues described herein are designed to
XX CC reduce perturbation of the 3-dimensional structure of the hormone
XX CC thereby creating greater likelihood that the dimer will be formed in vivo
XX CC and the formed dimer will have affinity for the native receptors and have
XX CC agonistic activity on them. The changes stabilise the GPHs and prolong
XX CC the biological activities of the hormones. The analogues can have uses
XX CC as for the native GPHs.
XX SQ Sequence 165 AA;
XX
Query Match 98.13; Score 762; DB 20; Length 165;
Best Local Similarity 99.3%; Pred. No. 1.1e-61;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCPVITVTTCAGYCPMTTRVLQGLPALPQVVCNVR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVITVTTCAGYCPMTTRVLQGLPALPQVVCNVR 80
QY 62 DVFRESIRLPCGPGVNPVSYAVALSQCACLRSTTDCGPKDHPITCDPRQDSSS 121
DB 81 DVFRESIRLPCGPGVNPVSYAVALSQCACLRSTTDCGPKDHPITCDPRQDSSS 140
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 141 SKAPPSLPSPSLRPGSDT 160
RESULT 52
AAW99515
ID AAW99515 standard; Protein: 165 AA.
XX AC AAW99515;
XX DT 08-JUN-1999 (first entry)
XX DE Glycoprotein hormone analogue hCG-beta-054C.
XX KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX KW human follicle stimulating hormone; human thyroid stimulating hormone;
XX KW stability; primer; amplification; PCR; mutation.
XX OS Homo sapiens.
XX OS Synthetic.

```

```

XX PN WO985957-A2.
XX PD 30-DEC-1998.
XX PF 25-JUN-1998; 98MO-US13070.
XX PR 25-JUN-1997; 97US-0050784.
XX PA (ISTF ) ABS APPLIED RES SYSTEMS HOLDING NV.
XX PA (MCIN-) MCINNIS P G.
XX PI MOYLE WR;
XX DR WPI: 1999-081219/07.
XX PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX PT or hTSH, have an intersubunit disulphide crosslink between the
XX PT alpha- and beta-subunits to improve stability
XX PS Example 12; Page 89; 139pp; English.
XX CC The invention relates to the production of analogues of a heterodimeric
XX CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX CC (hCG), human luteinising hormone (hLH), human follicle stimulating
XX CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX CC muteins, which are modified to contain an intersubunit disulphide bond,
XX CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
XX CC improved stability, the analogue retaining at least a portion of the
XX CC reactivity for the corresponding native GPH receptor. This sequence
XX CC is particularly suitable for use in the generation of the
XX CC modified GPHs. The improved analogues are designed specifically to
XX CC reduce perturbation of the 3-dimensional structure of the hormone,
XX CC thereby creating greater likelihood that the dimer will be formed in vivo
XX CC and the formed dimer will have affinity for the native receptors and have
XX CC agonistic activity on them. The changes stabilise the GPHs and prolong
XX CC the biological activities of the hormones. The analogues can have uses
XX CC as for the native GPHs.
XX SQ Sequence 165 AA;
XX
Query Match 98.13; Score 762; DB 20; Length 165;
Best Local Similarity 99.3%; Pred. No. 1.1e-61;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCPVITVTTCAGYCPMTTRVLQGLPALPQVVCNVR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVITVTTCAGYCPMTTRVLQGLPALPQVVCNVR 80
QY 62 DVFRESIRLPCGPGVNPVSYAVALSQCACLRSTTDCGPKDHPITCDPRQDSSS 121
DB 81 DVFRESIRLPCGPGVNPVSYAVALSQCACLRSTTDCGPKDHPITCDPRQDSSS 140
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 141 SKAPPSLPSPSLRPGSDT 160
RESULT 53
AAW99534
ID AAW99534 standard; Protein: 165 AA.
XX AC AAW99534;
XX DT 08-JUN-1999 (first entry)
XX DE hCG-beta analogue hCG-beta'-Y37C.
XX KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX KW human follicle stimulating hormone; human thyroid stimulating hormone;
XX KW stability; primer; amplification; PCR; mutation.
XX OS Homo sapiens.
XX OS Synthetic.

```

OS Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX
 PD 30-DEC-1998.
 XX
 XX 25-JUN-1998: 98MO-US13070.
 XX
 XX 25-JUN-1997: 97US-0050784.
 XX
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 XX (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI: 1999-081219/07.
 XX
 PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX
 XX Disclosure: Fig 4B; 139pp: English.
 XX
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit of gonadotropin hormones (e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability. The analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutant hCG-beta subunit used for the generation of
 CC the modified GPHs. The improved analogues are designed specifically
 CC to reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX
 XX Sequence 165 AA:
 XX
 Query Match 97.9%; Score 761; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 1.3e-61;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKSGCPVCTVNTTCAGCTPTTRVVGSLPALPQVVCNTR 61
 DB 21 SKEPLRPRCPINATLAVEKSGCPVCTVNTTCAGCTPTTRVVGSLPALPQVVCNTR 80
 QY 62 DYRFESIRLPCGPRGVNPNVSYAVALSQCACALCRSTTDCGGPKDRHPLTCDPRQDSSS 121
 DB 81 DYRFESIRLPCGPRGVNPNVSYAVALSQCACALCRSTTDCGGPKDRHPLTCDPRQDSSS 140
 QY 122 SKAPPSLPSPSRLPSPSDT 141
 DB 141 SKAPPSLPSPSRLPSPSDT 160
 RESULT 54
 AAW9538
 ID AAW9538 standard; Protein; 165 AA.
 XX
 XX AAW9538;
 XX
 XX 08-JUN-1999 (first entry)
 XX
 XX hCG-beta analogue hCG-beta'-D99C.
 XX
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 XX human follicle stimulating hormone; human thyroid stimulating hormone;

KW stability; primer; amplification; PCR; mutation.
 XX
 OS Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX
 PD 30-DEC-1998.
 XX
 XX 25-JUN-1998: 98MO-US13070.
 XX
 XX 25-JUN-1997: 97US-0050784.
 XX
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 XX (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI: 1999-081219/07.
 XX
 PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX
 XX Disclosure: Fig 15B; 139pp: English.
 XX
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit of glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC mutants, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability. The analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutant hCG-beta subunit used for the generation of
 CC the modified GPHs. The improved analogues are designed specifically
 CC to reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX
 XX Sequence 165 AA:
 XX
 Query Match 97.9%; Score 761; DB 20; Length 165;
 Best Local Similarity 99.3%; Pred. No. 1.3e-61;
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKSGCPVCTVNTTCAGCTPTTRVVGSLPALPQVVCNTR 61
 DB 21 SKEPLRPRCPINATLAVEKSGCPVCTVNTTCAGCTPTTRVVGSLPALPQVVCNTR 80
 QY 62 DYRFESIRLPCGPRGVNPNVSYAVALSQCACALCRSTTDCGGPKDRHPLTCDPRQDSSS 121
 DB 81 DYRFESIRLPCGPRGVNPNVSYAVALSQCACALCRSTTDCGGPKDRHPLTCDPRQDSSS 140
 QY 122 SKAPPSLPSPSRLPSPSDT 141
 DB 141 SKAPPSLPSPSRLPSPSDT 160
 RESULT 55
 AAW86247
 ID AAW86247 standard; Protein; 265 AA.
 XX
 XX AAW86247;
 XX
 XX 26-APR-1996 (first entry)
 XX
 XX Single chain gonadotropin analogue 1.
 XX
 XX Single chain gonadotropin; human chorionic gonadotropin; hCG;

alpha; beta; subunit; analogue; glycoprotein hormone; fertility; inhibit; stimulate; increase; lutropin; luteinising hormone; LH; follicle stimulating hormone; FSH; vaccine; contraceptive.

Synthetic.

Key Location/Qualifiers
Peptide 1..20
Region 21..165
/label= hCG_beta_subunit_(1-145)
Misc-difference 70
/note= "Arg corresponds to CCG codon".
Region 166..173
/label= linker
Region 174..265
/label= Gonadotropin_alpha_subunit_(1-92)
W09522340-A1.
24-AUG-1995.
17-FEB-1995; 95WO-US02067.
18-FEB-1994; 94US-0199382.
(SENS-) SENS1-TEST.
Moyle WR;
WPI: 1995-302553/39.
N-PSDB: AAT03212.
Methods for altering fertility in mammals, esp. humans - e.g. stimulating fertility by reducing the activity and/or levels of circulating glyco-protein hormones having lutropin activity

Example 12 and Claim 39; Fig 6; 102pp: English.

Analogue 1 (human CG-beta(1-145)-linker-human CG-alpha(1-92)) is a specific example of a single chain gonadotropin having a chorionic gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16 amino acids. The analogue has luteinising hormone (lutropin) activity and is useful for inducing ovulation and increasing male fertility.

Query Match 97.94; Score 761; DB 16; Length 265;
Best Local Similarity 99.38; Pred No. 2 1e-61;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLPRCPRIINATLAVEKEGCPVCTVTTCAGYCTMTVRLQGVLPALPQVVCNTR 61
DB 21 SKEPLPRCPRIINATLAVEKEGCPVCTVTTCAGYCTMTVRLQGVLPALPQVVCNTR 80
QY 62 DVRFESIRLPCCPGVNPVSVYVALSCQCALCRSTTDCGPKDHPDTCDDPRQDSSS 121
DB 81 DVRFESIRLPCCPGVNPVSVYVALSCQCALCRSTTDCGPKDHPDTCDDPRQDSSS 140
QY 122 SKAPPSLPSPRLPQSDT 141
DB 141 SKAPPSLPSPRLPQSDT 160

RESULT 56
AAR86259 standard; Protein: 265 AA.
AC AAR86259;
XX 08-MAY-1996 (first entry)
XX

Partially deglycosylated single chain gonadotropin analogue 1a.

Single chain gonadotropin; human chorionic gonadotropin; hCG; alpha; beta; subunit; analogue; glycoprotein hormone; fertility; inhibit; stimulate; increase; lutropin; luteinising hormone; LH; follicle stimulating hormone; FSH; vaccine; contraceptive.

Synthetic.

Key Location/Qualifiers
Peptide 1..20
Region 21..165
/label= hCG_beta_subunit_(1-145)
Misc-difference 70
/note= "Arg corresponds to CCG codon".
Region 166..173
/label= linker
Region 174..265
/label= Gonadotropin_alpha_subunit_(1-92)
Misc-difference 223
/note= "wild-type Asn at position 52 of the alpha-subunit has been replaced by Gln to remove a glycosylation site".
Misc-difference 251
/note= "wild-type Asn at position 78 of the alpha-subunit has been replaced by Gln to remove a glycosylation site".
W09522340-A1.
24-AUG-1995.
17-FEB-1995; 95WO-US02067.
18-FEB-1994; 94US-0199382.
(SENS-) SENS1-TEST.
Moyle WR;
WPI: 1995-302553/39.
N-PSDB: AAT03243.
Methods for altering fertility in mammals, esp. humans - e.g. stimulating fertility by reducing the activity and/or levels of circulating glyco-protein hormones having lutropin activity

Example 23; Fig 18; 102pp: English.

Analogue 1a (human CG-beta(1-145)-linker-human CG-alpha(1-92)(H530, M780)) is a specific example of a single chain gonadotropin having a chorionic gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16 amino acids. The analogue 1a was derived from analogue 1 by removing the two glycosylation sites from the alpha-subunit. The analogue has anti-luteinising hormone (lutropin) activity and can be used for facilitating ovulation, terminating pregnancy and reducing androgen secretion.

Query Match 97.94; Score 761; DB 16; Length 265;
Best Local Similarity 99.38; Pred No. 2 1e-61;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLPRCPRIINATLAVEKEGCPVCTVTTCAGYCTMTVRLQGVLPALPQVVCNTR 61
DB 21 SKEPLPRCPRIINATLAVEKEGCPVCTVTTCAGYCTMTVRLQGVLPALPQVVCNTR 80
QY 62 DVRFESIRLPCCPGVNPVSVYVALSCQCALCRSTTDCGPKDHPDTCDDPRQDSSS 121
DB 81 DVRFESIRLPCCPGVNPVSVYVALSCQCALCRSTTDCGPKDHPDTCDDPRQDSSS 140


```
QY 122 SKAPPPSLPSRLPGSDT 141
DB 141 SKAPPPSLPSRLPGSDT 160

RESULT 57
ID AAR15178 standard; Protein: 144 AA.
AC AAR15178;
XX 11-FEB-1992 (first entry)
XX hCG histidine substitution mutant, G10.
XX hCG protein hormone; human chorionic gonadotropin; disulphide.
XX Homo sapiens.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-contragestive agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX Table VIII: Page 67; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 139-144 replaced by histidine residues. This introduces
XX additional cleavage sites for CNBr, useful for determining the
XX disulphide bonds. This can be used to show that mutagenesis has
XX not altered the "normal" disulphide pattern of analogues, and for
XX examining protein folding.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX Sequence 144 AA;
Query Match 97.7%; Score 759; DB 12; Length 144;
Best Local Similarity 100.0%; Pred. No. 1.7e-61;
Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKGCPCVTITTCAGYCTMTVRVGLQVLPALPQVVCNTR 61
DB 1 SKEPLRRCRPNATLAVEKGCPCVTITTCAGYCTMTVRVGLQVLPALPQVVCNTR 60

QY 62 DYRFESIRLPCPCPGVNPVYVALSCCALCRSTTDCGPKDHPRLTCDPRFDSSS 121
DB 61 DYRFESIRLPCPCPGVNPVYVALSCCALCRSTTDCGPKDHPRLTCDPRFDSSS 120

QY 122 SKAPPPSLPSRLPGPS 139
DB 121 SKAPPPSLPSRLPGPS 138

RESULT 58
ID AAR15103 standard; Protein: 145 AA.
AC AAR15103;
XX 11-FEB-1992 (first entry)
XX hCG/hLH chimera, A5.
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinizing hormone; LH; CG.
XX Homo sapiens.
```

```
DT 11-FEB-1992 (first entry)
XX hCG/hLH chimera, D7.
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinizing hormone; LH; CG; Bovine.
XX Homo sapiens.
XX Bos taurus.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-contragestive agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX Table IV: Page 63; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 95 and 97 replaced by the corresponding residues in the
XX bovine LH protein. The chimeric hormone may be useful for identi-
XX fying residues which are important for binding to the human receptor
XX and may also have applications as an immunogen, agonist and/or ant-
XX agonist.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX Sequence 145 AA;
Query Match 97.7%; Score 759; DB 12; Length 145;
Best Local Similarity 98.6%; Pred. No. 1.8e-61;
Matches 138; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKGCPCVTITTCAGYCTMTVRVGLQVLPALPQVVCNTR 61
DB 1 SKEPLRRCRPNATLAVEKGCPCVTITTCAGYCTMTVRVGLQVLPALPQVVCNTR 60

QY 62 DYRFESIRLPCPCPGVNPVYVALSCCALCRSTTDCGPKDHPRLTCDPRFDSSS 121
DB 61 DYRFESIRLPCPCPGVNPVYVALSCCALCRSTTDCGPKDHPRLTCDPRFDSSS 120

QY 122 SKAPPPSLPSRLPGSDT 141
DB 121 SKAPPPSLPSRLPGSDT 140

RESULT 59
ID AAR15120 standard; Protein: 145 AA.
AC AAR15120;
XX 11-FEB-1992 (first entry)
XX hCG/hLH chimera, A5.
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinizing hormone; LH; CG.
XX Homo sapiens.
```

```

XX PN W09116922-A.
XX PD 14-NOV-1991.
XX PR 07-MAY-1991; 91WO-US03162.
XX PR 08-MAY-1990; 90US-0520703.
XX PR (UYNE-) UNIV MED NEW JERSEY.
XX PA Campbell RK, Moyle WR;
XX PI WPI; 1991-353528/48.
XX DR New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents, for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VI; Page 65; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC residues 47, and 51 replaced by the corresponding residues in the
XX CC human LH protein. The chimeric hormone may be useful in the
XX CC treatment of infertility in men and women and the promotion of
XX CC fertility in male and female animals.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 145 AA:
XX
Query Match 97.7%; Score 759; DB 12; Length 145;
Beat Local Similarity 98.6%; Pred. No. 1.8e-61;
Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVKEGCGPCVITVNTTICAGTCPTMTRVLQGVLPALPQVYCNR 61
DB 1 SKEPLRPRCPINATLAVKEGCGPCVITVNTTICAGTCPTMTRVLQGVLPALPQVYCNR 60
OY 62 DVRFESIRLPGCGVNVVYVAVALSCQCALCRSTTDCGCKPHPLTCDPRDSSS 121
DB 61 DVRFESIRLPGCGVNVVYVAVALSCQCALCRSTTDCGCKPHPLTCDPRDSSS 120
OY 122 SKAPPPSLPSRLPGPSDT 141
DB 121 SKAPPPSLPSRLPGPSDT 140
RESULT 60
AAR15175
ID AAR15175 standard; Protein; 147 AA.
XX AC AAR15175;
XX DT 11-FEB-1992 (first entry)
XX DE hCG insertion mutant, G7.
XX KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX KW neutralising antibody.
XX OS Homo sapiens.
XX OS W09116922-A.
XX PD 14-NOV-1991.
XX PR 07-MAY-1991; 91WO-US03162.
XX PR 08-MAY-1990; 90US-0520703.
XX PA (UYNE-) UNIV MED NEW JERSEY.
XX PI Campbell RK, Moyle WR;
XX DR WPI; 1991-353528/48.

```

```

DR WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents, for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VIII; Page 67; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC a histidine and glutamine residue inserted between
XX CC residues 54 and 55. This introduces an additional cleavage site
XX CC for CNBr, useful for determining the disulphide bonds. This can be
XX CC used to show that mutagenesis has not altered the "normal" disulphide
XX CC pattern of analogues, and for examining protein folding.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 147 AA:
XX
Query Match 97.7%; Score 759; DB 12; Length 147;
Beat Local Similarity 98.6%; Pred. No. 1.8e-61;
Matches 140; Conservative 0; Mismatches 0; Indels 2; Gaps 1;
OY 2 SKEPLRPRCPINATLAVKEGCGPCVITVNTTICAGTCPTMTRVLQGVLPALP--QVVCN 59
DB 1 SKEPLRPRCPINATLAVKEGCGPCVITVNTTICAGTCPTMTRVLQGVLPALPQVVCN 60
OY 60 YRDFRFSIRLPGCGVNVVYVAVALSCQCALCRSTTDCGCKPHPLTCDPRDSSS 119
DB 61 YRDFRFSIRLPGCGVNVVYVAVALSCQCALCRSTTDCGCKPHPLTCDPRDSSS 120
OY 120 SSKAPPPSLPSRLPGPSDT 141
DB 121 SSKAPPPSLPSRLPGPSDT 142
RESULT 61
AAR27682
ID AAR27682 standard; Protein; 145 AA.
XX AC AAR27682;
XX DT 12-JAN-1998 (first entry)
XX DE Chorionic gonadotropin beta subunit amino-terminal loop mutant.
XX KW Human; chorionic gonadotropin; chorionic gonadotropin; beta-hCG;
XX KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
XX KW contragestive medicament; cross-reactivity; luteinising hormone;
XX KW neutralising antibody.
XX OS Homo sapiens.
XX OS Synthetic.
XX OS W09704098-A2.
XX PD 06-FEB-1997.
XX PR 19-JUL-1996; 96WO-GB01717.
XX PR 19-JUL-1995; 95GB-0014816.
XX PA (DELV/) DELVES P J.
XX PA (ROIT/) ROITT I M.
XX PI Delves PJ, Lund T, Roitt IM;
XX DR WPI; 1997-132639/12.

```

PT Modified beta-human chorionic gonadotrophin proteins - useful as
 XX contragestative vaccine
 XX
 PS Example; Page -: 23pp; English.
 XX
 CC The present sequence is the human chorionic gonadotrophin beta
 CC subunit (beta-hCG), amino-terminal loop mutant Val125Iyr.
 CC which can be used in the preparation of a contragestative
 CC medicament. The modified beta-hCG has reduced cross-reactivity with
 CC luteinising hormone (LH), as defined by the ability of both
 CC proteins to react with the same antibody. The modified beta-hCG can
 CC be used as a contraceptive in females, in a vaccine, in a hCG
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC other natural antibodies to beta-hCG, which do not cross-react with
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).
 XX
 SQ Sequence 145 AA:
 Query Match 97.4%; Score 757; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 2.7e-61;
 Matches 136; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGLPALPOVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGLPALPOVCNVR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPFOSSS 121
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPFOSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140
 RESULT 62
 AAW27684
 ID AAW27684 standard; protein; 145 AA.
 XX
 AC AAW27684;
 DT 12-JAN-1998 (first entry)
 XX
 XE Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.
 XX
 KW Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contragestative medicament; cross-reactivity; luteinising hormone;
 KW contraceptive; immunoassay; Kaposi sarcoma; inhibition;
 KW neutralising antibody.
 XX
 OS Homo sapiens.
 OS Synthetic.
 XX
 XX Key Location/Qualifiers
 XX Misc-difference 68
 XX /note- "wild type Arg replaced with Glu"
 XX
 XX W09704098-A2.
 XX
 XX 06-FEB-1997.
 XX
 XX 19-JUL-1996; 96WO-GB01717.
 XX
 XX 19-JUL-1995; 95GB-0014816.
 XX
 XX (DELV/) DELVES P J.
 XX (NOIT/) ROITT I W.
 XX

PI Delves PJ, Lund T, Roitt IM;
 XX WPI; 1997-132639/12.
 XX
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 XX contragestative vaccine
 XX
 PS Claim 5; Page -: 23pp; English.
 XX
 CC The present sequence is the human chorionic gonadotrophin beta
 CC subunit (beta-hCG), carboxy-terminal loop mutant Arg88Glu,
 CC which can be used in the preparation of a contragestative
 CC medicament. The modified beta-hCG has reduced cross-reactivity with
 CC luteinising hormone (LH), as defined by the ability of both
 CC proteins to react with the same antibody. The modified beta-hCG can
 CC be used as a contraceptive in females, in a vaccine, in a hCG
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC other natural antibodies to beta-hCG, which do not cross-react with
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).
 XX
 SQ Sequence 145 AA:
 Query Match 97.4%; Score 757; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 2.7e-61;
 Matches 136; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGLPALPOVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGLPALPOVCNVR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPFOSSS 121
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPFOSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140
 RESULT 63
 AAR15117
 ID AAR15117 standard; protein; 145 AA.
 XX
 AC AAR15117;
 DT 11-FEB-1992 (first entry)
 XX
 XE hCG/hLH chimera, A3a.
 DE
 XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestative; vaccine; human chorionic gonadotrophin;
 KW luteinising hormone; LH; CG.
 XX
 OS Homo sapiens.
 XX
 XX W09116922-A.
 XX
 XX 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX

PT New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX Table VI; Page 65; 94pp: English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 77, 82, and 83 replaced by the corresponding
 CC residues in the human LH protein. The chimeric hormone may be
 CC useful in the treatment of infertility in men and women and the
 CC promotion of fertility in male and female animals.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA;

Query Match 97.3%; Score 756; DB 12; Length 145;
 Best Local Similarity 97.9%; Pred. No. 3.3e-61;
 Matches 137; Conservative 2; Mismatches 1; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCIIVTTTCAGYCPMTVRVLOGVLPALPQVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCIIVTTTCAGYCPMTVRVLOGVLPALPQVVCNTR 60
 QY 62 DVFESIRLPCGPGVNPVYVAVALSCQCALCRSTTDCGPKDHPILTCDDPRQDSSS 121
 DB 61 DVFESIRLPCGPGVNPVYVAVALSCQCALCRSTTDCGPKDHPILTCDDPRQDSSS 120
 QY 122 SKAPPSLPSPRLPGSDT 141
 DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 64
 AAR15177
 ID AAR15177 standard; Protein; 145 AA.
 AC AAR15177;
 DT 11-FEB-1992 (first entry)
 XX hCG histidine substitution mutant, G8.
 XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.
 XX Homo sapiens.
 XX Key Location/Qualifiers
 FH Misc-difference 78
 FT Misc-difference 78 /note- "anything but Pro"
 FT Misc-difference 78 /label- Ser, Thr
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (DYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table VIII; Page 67; 94pp: English.
 XX The sequence is an analogue of mature hCG beta subunit.

CC The substitution introduces an additional cleavage site for CNBr.
 CC show that mutagenesis has not altered the "normal" disulphide pattern
 CC of analogues, and for examining protein folding.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA;

Query Match 97.3%; Score 756; DB 12; Length 145;
 Best Local Similarity 98.6%; Pred. No. 3.3e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCIIVTTTCAGYCPMTVRVLOGVLPALPQVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCIIVTTTCAGYCPMTVRVLOGVLPALPQVVCNTR 60
 QY 62 DVFESIRLPCGPGVNPVYVAVALSCQCALCRSTTDCGPKDHPILTCDDPRQDSSS 121
 DB 61 DVFESIRLPCGPGVNPVYVAVALSCQCALCRSTTDCGPKDHPILTCDDPRQDSSS 120
 QY 122 SKAPPSLPSPRLPGSDT 141
 DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 65
 AAR27688
 ID AAR27688 standard; protein; 145 AA.
 AC AAR27688;
 DT 12-JAN-1998 (first entry)
 XX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.
 XX Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;
 XX beta subunit; amino-terminal loop; mutant; recombinant; LH; vaccine;
 XX Kaposi sarcoma; immunocessay; Kaposi sarcoma; inhibition;
 XX neutralising antibody.
 XX Homo sapiens.
 XX Synthetic.
 XX Key Location/Qualifiers
 FH Misc-difference 74
 FT Misc-difference 74 /note- "wild type Arg replaced with Ser"
 XX W09704098-A2.
 XX 06-FEB-1997.
 XX 19-JUL-1996; 96WO-GB01717.
 XX 19-JUL-1995; 95GB-0014816.
 XX (DELV/) DELVES P J.
 XX (ROIT/) ROIT I M.
 XX Delves PJ, Lund T, Roitt IM;
 XX WPI; 1997-132639/12.
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 XX contragestative vaccine
 XX Example; Page -; 23pp: English.
 XX The present sequence is the human chorionic gonadotrophin beta
 XX subunit (beta-hCG), carboxy-terminal loop mutant Arg74Ser,
 XX which can be used in the preparation of a contragestative
 XX medicament. The modified beta-hCG has reduced cross-reactivity with
 XX luteinising hormone (LH), as defined by the ability of both

CC proteins to react with the same antibody. The modified beta-hCG can
 CC be used as a contraceptive in females, in a vaccine, in a hCG
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC neutralising antibodies to beta-hCG, which do not cross-react with
 CC other natural hormones.
 CC N.B. Sequence in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).

XX SQ Sequence 145 AA;
 Query Match 97.3%; Score 756; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 3.3e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVKEGCPVCTVNTTICAGYCTPTMRVLQGLPALPOVVCNVR 61
 DB 1 SKEPLPRCPINATLAVKEGCPVCTVNTTICAGYCTPTMRVLQGLPALPOVVCNVR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPKLTCDPREFQSSS 121
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPKLTCDPREFQSSS 120
 QY 122 SKAPPPSLPSRLPGSDT 141
 DB 121 SKAPPPSLPSRLPGSDT 140

RESULT 66
 AAW27687
 ID AAW27687 standard; protein; 145 AA.
 XX AC AAW27687;
 XX DT 12-JAN-1998 (first entry)
 XX DX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.
 XX KW Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contraceptive medication; cross-reactivity; luteinising hormone;
 KW neutralising antibody.
 XX KW Homo sapiens.
 OS Synthetic.
 XX Key Location/Qualifiers
 FT Misc-difference 79 /note= "wild type val replaced with His"
 XX FT
 XX PN WO9704098-A2.
 XX PD 06-FEB-1997.
 XX PF 19-JUL-1996; 96WO-GB01717.
 XX PR 19-JUL-1995; 95GB-0014816.
 XX RA (DELV/) DELVES P. J.
 XX PA (ROIT/) ROITT I. M.
 XX PI Delves P.J., Lund T., Roitt I.M.
 XX DR WPI; 1997-132639/12.
 XX PT Modified beta-human chorionic gonadotrophin proteins - useful as
 XX PT contraceptive vaccine
 XX PS Example; Page -: 23pp; English.
 XX PD The present sequence is the human chorionic gonadotrophin beta

CC subunit (beta-hCG), carboxy-terminal loop mutant Val79His,
 CC which can be used in the preparation of a contraceptive
 CC medicament. The modified beta-hCG has reduced cross-reactivity with
 CC luteinising hormone (LH), as defined by the ability of both
 CC proteins to react with the same antibody. The modified beta-hCG can
 CC be used as a contraceptive in females, in a vaccine, in a hCG
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC neutralising antibodies to beta-hCG, which do not cross-react with
 CC other natural hormones.
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).

XX SQ Sequence 145 AA;
 Query Match 97.2%; Score 755; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 4.4e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVKEGCPVCTVNTTICAGYCTPTMRVLQGLPALPOVVCNVR 61
 DB 1 SKEPLPRCPINATLAVKEGCPVCTVNTTICAGYCTPTMRVLQGLPALPOVVCNVR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPKLTCDPREFQSSS 121
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPKLTCDPREFQSSS 120
 QY 122 SKAPPPSLPSRLPGSDT 141
 DB 121 SKAPPPSLPSRLPGSDT 140

RESULT 67
 AAR86258
 ID AAR86258 standard; Protein; 181 AA.
 XX AC AAR86258;
 XX DT 02-MAY-1996 (first entry)
 XX DX Human CG beta-subunit (N130) lacking first glycosylation site.
 XX KW Single chain gonadotropin; human chorionic gonadotropin; hCG;
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;
 KW inhibit; stimulate; increase; lutropin; luteinising hormone; LH;
 KW follicle stimulating hormone; FSH; vaccine; contraceptive;
 KW deglycosylated; glycosylation site; deletion.
 OS Synthetic.
 XX Key Location/Qualifiers
 FT Peptide 1..20
 FT /label= leader
 FT Region 21..165
 FT /label= hCG_beta_subunit_(1-145)
 FT /note= "the native glycosylation site at position
 FT 13 of hCG beta has been removed"
 FT Misc-difference 33 /note= "wild-type Asn 13 has been replaced by Gln
 FT to remove a glycosylation site"
 FT Misc-difference 70 /note= "Arg corresponds to CCG codon"
 FT Region 166..173
 FT /label= linker
 FT Region 174..181
 FT /label= Gonadotropin_alpha_subunit_(1-8)
 FT /note= "first 8 residues of alpha subunit"
 XX PN WO9522340-A1.
 XX PD 24-AUG-1995.

PF 17-FEB-1995; 95MO-US02067.
 XX 18-FEB-1994; 94US-0199382.
 XX (SENS-) SENSI-TEST.
 XX Moyle WR;
 PI N-PSDB: AAT03240.
 DR 1995-30253/39.
 XX N-PSDB: AAT03240.
 XX Methods for altering fertility in mammals, esp. humans - e.g.
 PT stimulating fertility by reducing the activity and/or levels of
 PT circulating glyco:protein hormones having lutropin activity
 XX
 XX Example 23; Fig 17; 102pp: English.
 CC Single chain gonadotropins having a chorionic gonadotropin (CG)
 CC beta-subunit and the N-terminus of the alpha-subunit. The
 CC C-terminus (or vice versa) joined by a linker of 1-16 amino acids
 CC are claimed. Ten specific analogues were synthesised, each of which
 CC was expected to contain 4 Asn-linked oligosaccharides. Removal of
 CC the glycosylation sites, particularly from the alpha-subunit, has
 CC been shown to reduce hormone efficacy and inhibit signal
 CC transduction. The present sequence is that of the hCG beta-subunit
 CC from which one of the two native glycosylation sites has been
 CC removed using strand overlap PCR.
 XX
 XX Sequence 181 AA;
 SQ
 Query Match 97.2%; Score 755; DB 16; Length 181;
 Best Local Similarity 98.6%; Pred. No. 5.1e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRCRPIATLAVEKGGPCVITVTTCAGTCPTMTRVLQGVLPALPOVVCNVR 61
 DB 21 SKEPLRCRPIATLAVEKGGPCVITVTTCAGTCPTMTRVLQGVLPALPOVVCNVR 80
 QY 62 DVRFESIRLPQCGPVNPNVSYVALSCCALCRSTTDCGGPKDHPITCDPRFDSSS 121
 DB 81 DVRFESIRLPQCGPVNPNVSYVALSCCALCRSTTDCGGPKDHPITCDPRFDSSS 140
 QY 122 SKAPPSLPSPRLPSPSDT 141
 DB 141 SKAPPSLPSPRLPSPSDT 160
 QY 122 SKAPPSLPSPRLPSPSDT 141
 DB 141 SKAPPSLPSPRLPSPSDT 160
 RESULT 68
 AAR15065
 ID AAR15065 standard; Protein: 145 AA.
 AC AAR15065;
 XX
 XX 11-FEB-1992 (first entry)
 DT hCG/hFSH chimera, B5.
 DE
 XX Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 OS
 XX Equus caballus.
 OS
 XX WO9116922-A.
 XX 14-NOV-1991.
 PD
 XX 07-MAY-1991; 91MO-US03162.
 PF
 XX 08-MAY-1990; 90US-0520703.
 PR
 XX (UTNE-) UNIV MED NEW JERSEY.
 PA
 XX Campbell RK, Moyle WR;
 PI
 XX WPI: 1991-353528/48.
 DR
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

PI Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX Table II; Page 61; 94pp: English.
 CC The sequence is an analogue of mature hCG beta subunit having
 CC residues 55, 56, and 58 replaced by the corresponding
 CC residues in the hFSH protein. It was prepd: by site directed
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit.
 CC The chimeric hormone is capable of directing hormone binding to
 CC both LH and FSH receptors and may be useful for the treatment of
 CC infertility in men and women and the promotion of fertility in male
 CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15199).
 XX
 XX Sequence 145 AA;
 SQ
 Query Match 97.0%; Score 754; DB 12; Length 145;
 Best Local Similarity 97.9%; Pred. No. 5e-61;
 Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;
 QY 2 SKEPLRCRPIATLAVEKGGPCVITVTTCAGTCPTMTRVLQGVLPALPOVVCNVR 61
 DB 1 SKEPLRCRPIATLAVEKGGPCVITVTTCAGTCPTMTRVLQGVLPALPOVVCNVR 60
 QY 62 DVRFESIRLPQCGPVNPNVSYVALSCCALCRSTTDCGGPKDHPITCDPRFDSSS 121
 DB 61 DVRFESIRLPQCGPVNPNVSYVALSCCALCRSTTDCGGPKDHPITCDPRFDSSS 120
 QY 122 SKAPPSLPSPRLPSPSDT 141
 DB 121 SKAPPSLPSPRLPSPSDT 140
 RESULT 69
 AAR15110
 ID AAR15110 standard; Protein: 145 AA.
 AC AAR15110;
 XX
 XX 11-FEB-1992 (first entry)
 DT hCG/eLH chimera, E2.
 DE
 XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG; equine; horse.
 XX Homo sapiens.
 OS
 XX Equus caballus.
 OS
 XX WO9116922-A.
 XX 14-NOV-1991.
 PD
 XX 07-MAY-1991; 91MO-US03162.
 PF
 XX 08-MAY-1990; 90US-0520703.
 PR
 XX (UTNE-) UNIV MED NEW JERSEY.
 PA
 XX Campbell RK, Moyle WR;
 PI
 XX WPI: 1991-353528/48.
 DR
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

XX Table V; Page 64; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 94-96 replaced by corresponding residues from equine
 CC LH protein. The chimeric hormone may be useful for identifying
 CC residues which are important for binding to the human receptor and
 CC may also have applications as an immunogen, agonist and/or antagonist.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA:
 SQ Query Match 97.0%; Score 754; DB 12; Length 145;
 Best Local Similarity 97.9%; Pred. No. 5e-61;
 Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCTPTRVQLQVLPALPQVVCNTR 61
 Db 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCTPTRVQLQVLPALPQVVCNTR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGPKDHPDLTCDPRFDSSS 121
 Db 61 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGPKDHPDLTCDPRFDSSS 120
 QY 122 SKAPPSLPSPSLPGPSDT 141
 Db 121 SKAPPSLPSPSLPGPSDT 140
 RESULT 70
 AAW27686
 ID AAW27686 standard; protein: 145 AA.
 AC AAW27686;
 XX 12-JAN-1998 (first entry)
 DE Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.
 XX Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contraceptive medication; cross-reactivity; luteinising hormone;
 KW neutralising antibody.
 KW Homo sapiens.
 OS Synthetic.
 PH Key Location/Qualifiers
 FT Misc-difference 75 /note= "wild type Gly replaced with His"
 XX W09704098-A2.
 XX 06-FEB-1997.
 XX 19-JUL-1996; 96WO-GB01717.
 XX 19-JUL-1995; 95GB-0014816.
 XX (DELV/) DELVES P J.
 XX (ROIT/) ROITT I M.
 XX Delves PJ, Lund T, Roitt IM;
 XX WPI: 1997-132639/12.
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 PT contraceptive vaccine
 XX Example; Page -: 23pp; English.
 XX The present sequence is the human chorionic gonadotrophin beta

CC subunit (beta-hCG), carboxy-terminal loop mutant Gly75His,
 CC which can be used in the preparation of a contraceptive
 CC medication. The modified beta-hCG has reduced cross-reactivity with
 CC luteinising hormone (LH), as defined by the ability of both hCG can
 CC bind to a receptor, namely anti-hCG antibody. A vaccine in a hCG
 CC based on a recombinant antigen, a vaccine in a hCG
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC neutralising antibodies to beta-hCG, which do not cross-react with
 CC other natural hormones.
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).
 XX Sequence 145 AA:
 SQ Query Match 97.0%; Score 754; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 5e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCTPTRVQLQVLPALPQVVCNTR 61
 Db 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCTPTRVQLQVLPALPQVVCNTR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGPKDHPDLTCDPRFDSSS 121
 Db 61 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGPKDHPDLTCDPRFDSSS 120
 QY 122 SKAPPSLPSPSLPGPSDT 141
 Db 121 SKAPPSLPSPSLPGPSDT 140
 RESULT 71
 AAW27681
 ID AAW27681 standard; protein: 145 AA.
 AC AAW27681;
 XX 12-JAN-1998 (first entry)
 DE Chorionic gonadotrophin beta subunit amino-terminal loop mutant.
 XX Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contraceptive medication; cross-reactivity; luteinising hormone;
 KW neutralising antibody.
 KW Homo sapiens.
 OS Synthetic.
 PH Key Location/Qualifiers
 FT Misc-difference 24 /note= "wild type Pro replaced with His"
 XX W09704098-A2.
 XX 06-FEB-1997.
 XX 19-JUL-1996; 96WO-GB01717.
 XX 19-JUL-1995; 95GB-0014816.
 XX (DELV/) DELVES P J.
 XX (ROIT/) ROITT I M.
 XX Delves PJ, Lund T, Roitt IM;
 XX WPI: 1997-132639/12.
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 PT contraceptive vaccine

XX Example: Page -: 23pp; English.
 XX
 CC The present sequence is the human chorionic gonadotropin beta
 CC subunit (beta-hCG), amino-terminal loop mutant Pro24His,
 CC which can be used in the preparation of a contraceptive
 CC medicament. The modified beta-hCG has reduced cross-reactivity with
 CC luteinising hormone (LH), as defined by the ability of both
 CC beta-hCGs to react with the same antibody. The modified beta-hCG can
 CC be used as a contraceptive agent. The modified beta-hCG is active, e.g.
 CC specific immunoassay and for applications where hCG is active, e.g.
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC neutralising antibodies to beta-hCG, which do not cross-react with
 CC other natural hormones.
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).
 XX
 SQ Sequence 145 AA:
 Query Match 96.9%; Score 753; DB 18; Length 145;
 Best Local Similarity 98.6%; Pred. No. 6.2e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0:
 QY 2 SKEPLAPRCRPNATLAVERGECPCVITNTICAGYCTMTVRVQLGVLPALPQVNCYR 61
 DB 1 SKEPLAPRCRPNATLAVERGECPCVITNTICAGYCTMTVRVQLGVLPALPQVNCYR 60
 QY 62 DVFESIRLPGCRPNVYVAVALSQCACALCRSTTDCGKPKDHLPTCDPRFQSSS 121
 DB 61 DVFESIRLPGCRPNVYVAVALSQCACALCRSTTDCGKPKDHLPTCDPRFQSSS 120
 QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 121 SKAPPSLPSPSLRPGSDT 140
 RESULT 72
 AA99541
 ID AA99541 standard; Protein; 165 AA.
 AC AA99541;
 XX 08-JUN-1999 (first entry)
 XX hCG-beta analogue hCG-beta -Y37C.D99C.
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 XX human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 XX 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (LSTP) ABS APPLIED RES SYSTEMS HOLDING NY.
 XX (MCIN-) MCINNIS P.G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 XX or hTSH, have an intersubunit disulphide crosslink between the
 XX alpha- and beta-subunits to improve stability

XX Disclosure: Fig 31B; 139pp; English.
 XX
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC nucleins, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, or the
 CC reverse, and a disulphide bond between the two subunits. The invention
 CC also relates to the corresponding native GPH receptor. This sequence
 CC represents a mutant hCG-beta subunit used for the generation of
 CC the modified GPHs. The improved analogues are designed specifically
 CC to reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX
 SQ Sequence 165 AA:
 Query Match 96.8%; Score 752; DB 20; Length 165;
 Best Local Similarity 98.6%; Pred. No. 8.7e-61;
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0:
 QY 2 SKEPLAPRCRPNATLAVERGECPCVITNTICAGYCTMTVRVQLGVLPALPQVNCYR 61
 DB 21 SKEPLAPRCRPNATLAVERGECPCVITNTICAGYCTMTVRVQLGVLPALPQVNCYR 80
 QY 62 DVFESIRLPGCRPNVYVAVALSQCACALCRSTTDCGKPKDHLPTCDPRFQSSS 121
 DB 81 DVFESIRLPGCRPNVYVAVALSQCACALCRSTTDCGKPKDHLPTCDPRFQSSS 140
 QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 141 SKAPPSLPSPSLRPGSDT 160
 RESULT 73
 AA995112
 ID AA995112 standard; Protein; 145 AA.
 AC AA995112;
 XX 11-FEB-1992 (first entry)
 XX hCG/αLH chimera, E4.
 XX Glycoprotein hormone; immuno-castration;
 XX immuno-contraceptive; vaccine; human chorionic gonadotropin;
 XX luteinising hormone, LH; CG; equine; horse.
 OS Homo sapiens.
 XX Equus caballus.
 XX WO9116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.

XX PS Table V; Page 64; 94pp; English.
 CC The sequence is an analogue of mature hCG beta subunit having
 CC residues 112-115 replaced by the corresponding residues in the
 CC hFSH protein. It was prep. by site directed mutagenesis of a
 CC cDNA sequence encoding the hCG beta subunit. The chimeric
 CC hormone is capable of directing hormone binding to both LH and
 CC FSH receptors and may be useful for the treatment of infertility
 CC in men and women and the promotion of fertility in male

XX PS Query Match 96.5%; Score 750; DB 12; Length 145;
 CC Best Local Similarity 97.9%; Pred. No. 1.2e-60;
 CC Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

XX PS 2 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 61
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 1 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 60

XX PS 62 DYRFESIRLPCGPRGVNPNVSYVALSCQALCRSTTDCGPKDHPHTCDPRFQDSSS 121
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 61 DYRFESIRLPCGPRGVNPNVSYVALSCQALCRSTTDCGPKDHPHTCDPRFQDSSS 120

XX PS 122 SKAPPSLPSPSLPGPSDT 141
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 121 SKAPPSLPSPSLPGPSDT 140

XX PS RESULT 74
 CC AAR15069
 CC ID AAR15069 standard; Protein: 145 AA.
 CC AC AAR15069;
 CC DT 11-FEB-1992 (first entry)
 CC DE hCG/hFSH chimera, B9.
 CC XX Glycoprotein hormone; fertility; immuno-castration;
 CC KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 CC KW follicle stimulating hormone; FSH; CG;
 CC XX Homo sapiens.
 CC OS WO9116922-A.
 CC PN 14-NOV-1991.
 CC XX 07-MAY-1991; 91WO-US03162.
 CC XX 08-MAY-1990; 90US-0520703.
 CC XX (UYNE-) UNIV MED NEW JERSEY.
 CC PA Campbell RK, Moyle WR;
 CC PI WPI; 1991-353528/48.
 CC DR New glyco-protein hormone analogues - for inducing fertility as
 CC PT immuno-castration agents, for suppressing reproductive system
 CC PT development and as immuno-contragestive vaccines.
 CC XX Table II; Page 61; 94pp; English.

XX PS The sequence is an analogue of mature hCG beta subunit having
 CC residues 94-97 replaced by the corresponding residues in the
 CC hFSH protein. It was prep. by site directed mutagenesis of a
 CC cDNA sequence encoding the hCG beta subunit. The chimeric
 CC hormone is capable of directing hormone binding to both LH and
 CC FSH receptors and may be useful for the treatment of infertility
 CC in men and women and the promotion of fertility in male

CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).

XX PS Query Match 96.4%; Score 749; DB 12; Length 145;
 CC Best Local Similarity 97.1%; Pred. No. 1.4e-60;
 CC Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

XX PS 2 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 61
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 1 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 60

XX PS 62 DYRFESIRLPCGPRGVNPNVSYVALSCQALCRSTTDCGPKDHPHTCDPRFQDSSS 121
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 61 DYRFESIRLPCGPRGVNPNVSYVALSCQALCRSTTDCGPKDHPHTCDPRFQDSSS 120

XX PS 122 SKAPPSLPSPSLPGPSDT 141
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 121 SKAPPSLPSPSLPGPSDT 140

XX PS RESULT 75
 CC AAR15118
 CC ID AAR15118 standard; Protein: 145 AA.
 CC AC AAR15118;
 CC DT 11-FEB-1992 (first entry)
 CC DE hCG/hLH chimera, A3b.
 CC XX Glycoprotein hormone; immuno-castration;
 CC KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 CC KW lutinising hormone; LH; CG.
 CC XX Homo sapiens.
 CC OS WO9116922-A.
 CC PN 14-NOV-1991.
 CC XX 07-MAY-1991; 91WO-US03162.
 CC XX 08-MAY-1990; 90US-0520703.
 CC XX (UYNE-) UNIV MED NEW JERSEY.
 CC PA Campbell RK, Moyle WR;
 CC PI WPI; 1991-353528/48.
 CC DR New glyco-protein hormone analogues - for inducing fertility as
 CC PT immuno-castration agents, for suppressing reproductive system
 CC PT development and as immuno-contragestive vaccines.
 CC XX Table VI; Page 65; 94pp; English.

XX PS The sequence is an analogue of mature hCG beta subunit having
 CC residues 99, 91, 92 and 99 replaced by the corresponding
 CC residues in the human LH protein. The chimeric hormone may be
 CC useful in the treatment of infertility in men and women and the
 CC promotion of fertility in men and women.
 CC CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 CC XX Sequence 145 AA;

XX PS Query Match 96.4%; Score 749; DB 12; Length 145;
 CC Best Local Similarity 97.1%; Pred. No. 1.4e-60;
 CC Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

XX PS 2 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 61
 CC ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
 CC 1 SKEPLAPCRPRINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQLQGLPALPOVYCNR 60

Db 1 SKEPLRPRINATLAVEKPCVITVTTCAGTCPTMTRVLGVLPAALPQVNCYR 60
 QY 62 DVRFESIRLPCPGVNPVSVAVALSQCACLRSTTDCGGPKDHPITCDPQFQSSS 121
 Db 61 DVRFESIRLPCPGVNPVSVAVALSQCACLRSTTDCGGPKDHPITCDPQFQSSS 120
 QY 122 SKAPPSLPSPSLPQSDT 141
 Db 121 SKAPPSLPSPSLPQSDT 140

RESULT 76
 AAY43270 standard; Protein: 204 AA.
 XX AAY43270;
 XX AAY43270;
 DT 19-JAN-2000 (first entry)
 XX Human CG beta subunit-Jun fusion protein sequence.
 DE
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 OS Homo sapiens.
 OS Synthetic.
 PN MO9953065-A1.
 XX
 XX 21-OCT-1999.
 XX 13-APR-1999; 99MO-US08018.
 XX 14-APR-1998; 98OS-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 XX N-PSDB: AAZ31742.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 XX Example 1: Fig 6; 73pp: English.
 XX This sequence represents a fusion protein of the human chorionic
 CC gonadotrophin (hCG) beta subunit and Jun. The invention relates to a
 CC method of forming a cysteine knot protein (I) having alpha and
 CC beta-subunits comprising attaching a dimerisation domain (DD) to either
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and
 CC to the C-terminus of the beta-subunit and dimerising the products to form
 CC a heterodimeric protein analog (II). The method is used to produce
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein
 CC hormones, potentially useful, e.g. for treating infertility where caused
 CC by polycystic ovarian disease (associated with excessive levels of
 CC luteinising hormone). Products that retain DD's are also useful as
 CC immunogens (since a DD may contain highly antigenic amino
 CC acid sequences). Attachment of a DD which is a heterodimeric protein
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 204 AA;
 SQ

Best Local Similarity 100.0%; Pred. NO. 2e-60;
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Caps 0;

OY 6 LRPDRPINATLAVEKPCVITVTTCAGTCPTMTRVLGVLPAALPQVNCYR 65
 Db 64 LRPDRPINATLAVEKPCVITVTTCAGTCPTMTRVLGVLPAALPQVNCYR 123
 QY 66 ESIRLPCPGVNPVSVAVALSQCACLRSTTDCGGPKDHPITCDPQFQSSSKAP 125
 Db 124 ESIRLPCPGVNPVSVAVALSQCACLRSTTDCGGPKDHPITCDPQFQSSSKAP 183

OY 126 PFLPSLPSPSLPQSDT 141
 Db 184 PFLPSLPSPSLPQSDT 199

RESULT 77
 AAY43274
 ID AAY43274 standard; Protein: 204 AA.
 XX AAY43274;
 XX AAY43274;
 DT 19-JAN-2000 (first entry)
 XX Human CG beta subunit-Jun fusion protein sequence.
 DE
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 OS Homo sapiens.
 OS Synthetic.
 PN MO9953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99MO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 XX N-PSDB: AAZ31750.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 XX Example 3: Fig 12; 73pp: English.
 XX This sequence represents a fusion protein of the human chorionic
 CC gonadotrophin (hCG) beta subunit and Jun. The invention relates to a
 CC method of forming a cysteine knot protein (I) having alpha and
 CC beta-subunits comprising attaching a dimerisation domain (DD) to either
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and
 CC to the C-terminus of the beta-subunit and dimerising the products to form
 CC a heterodimeric protein analog (II). The method is used to produce
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein
 CC hormones, potentially useful, e.g. for treating infertility where caused
 CC by polycystic ovarian disease (associated with excessive levels of
 CC luteinising hormone). Products that retain DD's are also useful as
 CC immunogens or antigens (since a DD may contain highly antigenic amino
 CC acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.

QY 2 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 61
 DB 1 SREPLRPMCHPINALLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 60
 QY 62 DYRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140
 RESULT 80
 AAW27685
 ID AAW27685 standard; protein; 145 AA.
 AC AAW27685;
 XX 12-JAN-1998 (first entry)
 DE Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.
 KW Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contragestative medicament; cross-reactivity; luteinising hormone;
 KW contragestive; immunoassay; Kaposi sarcoma; inhibition;
 KW neutralising antibody.
 OS Homo sapiens.
 OS Synthetic.
 XX Key Location/Qualifiers
 FT Misc-difference 71 /note= "wild type Gly replaced with Arg"
 FT Misc-difference 74 /note= "wild type Arg replaced with Ser"
 FT W09704098-A2.
 XX 06-FEB-1997.
 XX 19-JUL-1996; 96MO-GB01717.
 XX 19-JUL-1995; 95GB-0014816.
 XX (DELV/) DELVES P J.
 XX (ROIT/) ROITT I M.
 XX Delves PJ, Lund T, Roitt IM;
 XX WPI: 1997-132639/12.
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 XX contragestative vaccine
 XX Example; Page -: 23pp; English.
 XX The present sequence is the human chorionic gonadotrophin beta
 XX subunit (beta-hCG), carboxy-terminal loop mutant Gly71Arg,
 XX Arg74Ser, which can be used in the preparation of a contragestative
 XX medicament. The modified beta-hCG has reduced cross-reactivity with
 XX luteinising hormone (LH), as defined by the ability of both
 XX proteins to react with the same antibody. The modified beta-hCG can
 XX be used as a contraceptive in females in a vaccine, in a hCG
 XX specific immunoassay, in a luteinising hormone (LH) assay, e.g.
 XX Kaposi sarcoma inhibition. The modified beta-hCG can produce
 XX neutralising antibodies to beta-hCG, which do not cross-react with
 XX other natural hormones.
 XX N.B. Sequence not given in the specification, but constructed using
 XX the wild type beta-hCG sequence given in nature 307 959460, 37-40
 XX (1984).

XX Sequence 145 AA:
 Query Match 96.3%; Score 748; DB 18; Length 145;
 Best Local Similarity 97.9%; Pred. No. 1.8e-60;
 Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;
 QY 2 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 61
 DB 1 SREPLRPMCHPINALLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 60
 QY 62 DYRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140
 RESULT 81
 AAW27679
 ID AAW27679 standard; protein; 145 AA.
 AC AAW27679;
 XX 12-JAN-1998 (first entry)
 DE Chorionic gonadotrophin beta subunit amino-terminal loop mutant.
 KW Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contragestative medicament; cross-reactivity; luteinising hormone;
 KW contragestive; immunoassay; Kaposi sarcoma; inhibition;
 KW neutralising antibody.
 OS Homo sapiens.
 OS Synthetic.
 XX Key Location/Qualifiers
 FT Misc-difference 74 /note= "wild type Pro replaced with His"
 FT Misc-difference 75 /note= "wild type Val replaced with Tyr"
 FT W09704098-A2.
 XX 06-FEB-1997.
 XX 19-JUL-1996; 96MO-GB01717.
 XX 19-JUL-1995; 95GB-0014816.
 XX (DELV/) DELVES P J.
 XX (ROIT/) ROITT I M.
 XX Delves PJ, Lund T, Roitt IM;
 XX WPI: 1997-132639/12.
 XX Modified beta-human chorionic gonadotrophin proteins - useful as
 XX contragestative vaccine
 XX Example; Page -: 23pp; English.
 XX The present sequence is the human chorionic gonadotrophin beta
 XX subunit (beta-hCG), amino-terminal loop mutant Pro24His, Val25Tyr,
 XX Val26Leu, which can be used in the preparation of a contragestative
 XX medicament. The modified beta-hCG has reduced cross-reactivity with
 XX luteinising hormone (LH), as defined by the ability of both
 XX proteins to react with the same antibody. The modified beta-hCG can
 XX be used as a contraceptive in females, in a vaccine, in a hCG
 XX specific immunoassay and for applications where hCG is active, e.g.

CC vivo than individual subunits.
 XX
 SQ Sequence 204 AA:
 Query Match 96.4%; Score 749; DB 20; Length 204;
 Best Local Similarity 100.0%; Pred. No. 2e-60;
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 6 LRPRCPINATLAVEKEGCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 65
 DB 64 LRPRCPINATLAVEKEGCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 123
 QY 66 ESTRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKTCDDPRFQDSSSSKAP 125
 DB 124 ESTRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKTCDDPRFQDSSSSKAP 183
 QY 126 PPSLPSRLPGPSDT 141
 DB 184 PPSLPSRLPGPSDT 199
 RESULT 78
 AAY43306
 XX AAY43306 standard; Protein: 208 AA.
 AC AAY43306;
 XX
 DT 19-JAN-2000 (first entry)
 DE Human CG alpha subunit-Fos fusion protein sequence.
 XX
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; HCG; human; chorionic gonadotropin;
 KW alpha subunit; therapy; Fos.
 XX
 OS Homo sapiens.
 QS Synthetic.
 XX
 PN W09953065-A1.
 XX
 PD 21-OCT-1999.
 XX
 PF 13-APR-1999; 99MO-US08018.
 XX
 PR 14-APR-1998; 98US-0059625.
 XX
 PA (UYNE-) UNIV NEW JERSEY.
 XX
 PI Moyle WR;
 XX
 DR WPI; 1999-620431/53.
 XX
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins.
 XX
 XX Example 2: Fig 10; 73pp: English.
 XX This sequence represents a fusion protein of the human chorionic
 XX gonadotropin (hCG) alpha subunit and Fos. The fusion protein is
 XX method of forming a cysteine knot protein. (I) having alpha and
 XX beta subunits comprising attaching a dimerisation domain (DD) to either
 XX the N-termini of both subunits or the C-termini of the alpha-subunit and
 XX to the C-termini of the beta-subunit and dimerising the products to form
 XX a heterodimeric protein analog (II). The method is used to produce
 XX analogues (agonists or antagonists) of deglycosylated glycoprotein
 XX hormones, potentially useful, e.g. for treating infertility where caused
 XX by polycystic ovarian disease (associated with excessive levels of
 XX luteinising hormone). Products that retain DD's are also useful as
 XX immunogens or antigens (since a DD may contain highly antigenic amino
 XX acid residues). Attachment of a DD which may be removed later
 XX facilitates the formation of heterodimers, that have similar structures
 XX (and thus receptor-binding and immunogenic properties) to native dimers,

CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC the stability of heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX
 SQ Sequence 208 AA:
 Query Match 96.4%; Score 749; DB 20; Length 208;
 Best Local Similarity 100.0%; Pred. No. 2.1e-60;
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 6 LRPRCPINATLAVEKEGCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 65
 DB 68 LRPRCPINATLAVEKEGCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 127
 QY 66 ESTRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKTCDDPRFQDSSSSKAP 125
 DB 128 ESTRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKTCDDPRFQDSSSSKAP 187
 QY 126 PPSLPSRLPGPSDT 141
 DB 188 PPSLPSRLPGPSDT 203
 RESULT 79
 AAR15114
 XX AAR15114 standard; Protein: 145 AA.
 AC AAR15114;
 XX
 DT 11-FEB-1992 (first entry)
 DE HCG/hLH chimera, A1.
 XX
 DE Glycoprotein hormone; immuno-castration;
 KW immuno-contraceptive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG.
 XX
 OS Homo sapiens.
 XX
 PN W09116922-A.
 XX
 PD 14-NOV-1991.
 XX
 PF 07-MAY-1991; 91MO-US03162.
 XX
 PR 08-MAY-1990; 90US-0520703.
 XX
 PA (UYNE-) UNIV MED NEW JERSEY.
 XX
 PI Campbell RK, Moyle WR;
 XX
 DR WPI; 1991-393528/48.
 XX
 PT New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table VI; Page 65; 94pp: English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 2, 8, 10, and 15 replaced by the corresponding
 XX residues in the human LH protein. The chimeric hormone may be
 XX useful in the treatment of infertility in men and women and the
 XX promotion of fertility in male and female animals.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 SQ Sequence 145 AA:
 Query Match 96.3%; Score 748; DB 12; Length 145;
 Best Local Similarity 97.1%; Pred. No. 1.8e-60;
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

CC Kaposi sarcoma inhibition. The modified beta-hCG can produce
 CC neutralising antibodies to beta-hCG, which do not cross-react with
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40
 CC (1984).
 XX
 SQ Sequence 145 AA:
 Query Match 96.3%; Score 748; DB 18; Length 145;
 Best Local Similarity 97.9%; Pred. No. 1.8e-60;
 Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 61
 DB 1 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 60
 QY 62 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 120
 QY 122 SKAPPSLPSPSLPSPSDT 141
 DB 121 SKAPPSLPSPSLPSPSDT 140
 RESULT 82
 ID AAR15115 standard; Protein; 145 AA.
 XX AAR15115;
 AC AAR15115;
 DT 11-FEB-1992 (first entry)
 DE hCG/hLH chimera, A2.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG.
 XX Homo sapiens.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-contragestion agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table VI; Page 65; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 42, 47, 51 and 58 replaced by the corresponding
 XX residues in the human LH protein. The chimeric hormone may be
 XX useful in the treatment of infertility in men and women and the
 XX promotion of fertility in male and female animals.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 SQ Sequence 145 AA:
 Query Match 96.1%; Score 747; DB 12; Length 145;
 Best Local Similarity 97.1%; Pred. No. 2.2e-60;

Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 61
 DB 1 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 60
 QY 62 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 120
 QY 122 SKAPPSLPSPSLPSPSDT 141
 DB 121 SKAPPSLPSPSLPSPSDT 140
 RESULT 83
 ID AAR15068 standard; Protein; 145 AA.
 XX AAR15068;
 AC AAR15068;
 DT 11-FEB-1992 (first entry)
 DE hCG/hFSH chimera, B8.
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-contragestion agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table II; Page 61; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 86, 87, 89, 91 and 92 replaced by the corresponding
 XX residues in the hFSH protein. It was prepd. by site directed
 XX mutagenesis of a cDNA sequence encoding the hCG beta subunit.
 XX The chimeric hormone is capable of directing hormone binding to
 XX both LH and FSH receptors and may be useful for the treatment of
 XX infertility in men and women and the promotion of fertility in male
 XX and female animals. (See AAR15043, AAR15061-R15125 and
 XX AAR15161-R15198).
 XX
 SQ Sequence 145 AA:
 Query Match 96.0%; Score 746; DB 12; Length 145;
 Best Local Similarity 96.4%; Pred. No. 2.7e-60;
 Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 61
 DB 1 SKEPLRPRCPINATLAVKESGCPVITVTTICAGYCTPTTRVLOGVLPALPQVYCNTR 60
 QY 62 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGPKDHPITCDPRFQSSS 120

Db 61 DYRFESIRLPCPGVNVVSYAVATQCHGCKRSTTDCGPKDHLTCDDPRFQSSS 120
 QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 84
 AAR15101
 ID AAR15101 standard; Protein; 145 AA.
 AC AAR15101;
 XX 11-FEB-1992 (first entry)
 XX hCG/BLH chimera, D5.
 DE Glycoprotein hormone; immuno-castration;
 XX immuno-castration; vaccine; human chorionic gonadotropin;
 KW luteinizing hormone, LH, CG, bovine.
 XX Homo sapiens.
 OS Bos taurus.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table IV; Page 63; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 74, 77, 79, 82 and 83 replaced by the corresponding
 XX residues in the bovine LH protein. The chimeric hormone may be
 XX useful for identifying residues which are important for binding to
 XX the human receptor and may also have applications as an immunogen,
 XX agonist and/or antagonist.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX Sequence 145 AA;

Query Match 96.0%; Score 746; DB 12; Length 145;
 Best Local Similarity 96.4%; Pred. No. 2.7e-60;
 Matches 135; Conservative 3; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTRVLGVLPAQVQVGNR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTRVLGVLPAQVQVGNR 60

QY 62 DYRFESIRLPCPGVNVVSYAVALSOCALCRSTTDCGPKDHLTCDDPRFQSSS 121
 DB 61 DYRFESIRLPCPGVNVVSYAVALSOCALCRSTTDCGPKDHLTCDDPRFQSSS 120

QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 85
 AAR15176
 ID AAR15176 standard; Protein; 145 AA.
 AC AAR15176;
 XX 11-FEB-1992 (first entry)
 XX hCG histidine substitution mutant, G8.
 DE Glycoprotein hormone; human chorionic gonadotropin; disulphide.
 XX Homo sapiens.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table VIII; Page 67; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residue 116 replaced by a Cys residue. This introduces an
 XX additional cleavage site for CNBr, useful for determining the
 XX disulphide bonds. This can be used to show that mutagenesis has
 XX not altered the "normal" disulphide pattern of analogues, and for
 XX examining protein folding.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX Sequence 145 AA;

Query Match 96.0%; Score 746; DB 12; Length 145;
 Best Local Similarity 97.9%; Pred. No. 2.7e-60;
 Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTRVLGVLPAQVQVGNR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTRVLGVLPAQVQVGNR 60

QY 62 DYRFESIRLPCPGVNVVSYAVALSOCALCRSTTDCGPKDHLTCDDPRFQSSS 121
 DB 61 DYRFESIRLPCPGVNVVSYAVALSOCALCRSTTDCGPKDHLTCDDPRFQSSS 120

QY 122 SKAPPSLPSPSLRPGSDT 141
 DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 86
 AAR48385
 ID AAR48385 standard; Protein; 145 AA.
 AC AAR48385;
 XX 27-FEB-2001 (first entry)
 XX Human chorionic gonadotropin beta subunit structure I.
 XX Human chorionic gonadotropin; HCG; beta subunit; abortive; antifertility;
 KW cytostatic; vaccine; contraception; hormone related disease;
 KW hormone-associated carcinoma.

```

OS Homo sapiens.
XX US6143305-A.
XX
XX PD 07-NOV-2000.
XX
XX PF 06-JUN-1995; 95US-0471422.
XX
XX PR 25-AUG-1978; 78US-0936876.
XX PR 15-JUL-1987; 87US-0073748.
XX PR 26-AUG-1992; 92US-0835331.
XX PR 17-FEB-1989; 89US-0311331.
XX PR 07-MAY-1973; 73US-0357892.
XX PR 16-OCT-1973; 73US-0406821.
XX PR 27-DEC-1974; 75US-0423033.
XX PR 14-OCT-1974; 75US-0423033.
XX PR 16-JAN-1981; 81US-0112628.
XX PR 20-NOV-1981; 81US-0323690.
XX
XX PA (OHIS ) UNIV OHIO STATE.
XX
XX PI Stevens VC.
XX
XX PR WPI: 2001-023400/03.
XX
XX PT Antigenically modified polypeptide composition used as a vaccine
XX against human chorionic gonadotropin.
XX
XX PS Example 32; Column 18; 55pp; English.
XX
XX CC The present sequence is a fragment of the beta subunit of human
XX chorionic gonadotropin (hCG). It is given in a specification relating
XX to a vaccine composition capable of eliciting antibody formation against
XX hCG. The vaccine comprises an hCG polypeptide coupled to diphtheria
XX toxoid or tetanus toxoid and a vehicle comprising a mixture of mannide
XX contraction, abortion, and states of pregnancy. The vaccine is useful for
XX and disorders and the treatment of hormone associated carcinomas.
XX
XX SQ Sequence 145 AA:
XX
XX Query Match 96.0%; Score 746; DB 22; Length 145;
XX Best Local Similarity 97.9%; Pred. No. 2.7e-60;
XX Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNKR 61
XX DB 1 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNKR 60
XX
XX QY 62 DVRFESIRLPCGPGVNVSVAVALSQCALCRSTTDCGPKDHLPTCDPRFQDSSS 121
XX DB 61 DVRFESIRLPCGPGVNVSVAVALSQCALCRSTTDCGPKDHLPTCDPRFQDSSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 87
XX AAR15100
XX ID AAR15100 standard; Protein; 145 AA.
XX
XX AC AAR15100;
XX
XX DT 11-FEB-1992 (first entry)
XX
XX DE hCG/bLH chimera, D4.
XX
XX KW Glycoprotein hormone; immuno-castration;
XX human chorionic gonadotropin;
XX luteinizing hormone; LH; CG; bovine.
XX
XX OS Homo sapiens.

```

```

OS Bos taurus.
XX
XX PN W09116922-A.
XX
XX PD 14-NOV-1991.
XX
XX PR 07-MAY-1991; 91WO-US03162.
XX
XX PR 08-MAY-1990; 90US-0520703.
XX
XX PA (UTNE-) UNIV MED NEW JERSEY.
XX
XX PI Campbell RK, Moyle WR;
XX
XX DR WPI: 1991-353528/48.
XX
XX PT New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents for depression reproductive system
XX development and as immuno-contragestive vaccines.
XX
XX PS Table IV; Page 63; 94pp; English.
XX
XX CC The sequence is an analogue of mature hCG beta subunit having
XX residues 58, 60-62, 65 and 67 replaced by the corresponding
XX residues in the bovine LH protein. The chimeric hormone may be
XX useful for identifying residues which are important for binding to
XX the human chorionic gonadotropin receptor. Also have applications as an immunogen,
XX agonist and/or antagonist.
XX
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX SQ Sequence 145 AA:
XX
XX Query Match 95.9%; Score 745; DB 12; Length 145;
XX Best Local Similarity 95.7%; Pred. No. 3.3e-60;
XX Matches 134; Conservative 3; Mismatches 3; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNKR 61
XX DB 1 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNKR 60
XX
XX QY 62 DVRFESIRLPCGPGVNVSVAVALSQCALCRSTTDCGPKDHLPTCDPRFQDSSS 121
XX DB 61 ELRFASVRLPCGPGVNVSVAVALSQCALCRSTTDCGPKDHLPTCDPRFQDSSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 88
XX AAR15098
XX ID AAR15098 standard; Protein; 145 AA.
XX
XX AC AAR15098;
XX
XX DT 11-FEB-1992 (first entry)
XX
XX DE hCG/bLH chimera, D2.
XX
XX KW Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinizing hormone; LH; CG; bovine.
XX
XX OS Homo sapiens.
XX
XX PN W09116922-A.
XX
XX PD 14-NOV-1991.
XX
XX PR 07-MAY-1991; 91WO-US03162.
XX
XX PR 08-MAY-1990; 90US-0520703.

```

```

XX (UTNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immunostation agents, for suppressing reproductive system
XX development and as immuno-contragastive vaccines.
XX Table IV; Page 63; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 18, 22, 29, 30 and 32 replaced by the corresponding
XX residues in the bovine LH protein. The chimeric hormone may be
XX useful for identifying residues which are important for binding to
XX the human receptor and may also have applications as an immunogen,
XX as gonadotropin and/or as a contraceptive.
XX See ARL15043, ARL15061, RL15125 and ARL15161-RL15198.
XX Sequence 145 AA;

Query Match 95.9%; Score 745; DB 12; Length 145;
Best Local Similarity 96.4%; Pred. No. 3, 3e-60;
Matches 135; Conservative 1; Mismatches 4; Indels 0; Gaps 0;

QY 2 SKPELRPCRPINATLAVEKEGCVICITVTTCAGYCTPTMRVLQGVLPALPQVVCNVR 61
DB 1 SKPELRPCRPINATLAVEKEGCVICITVTTCAGYCTPTMRVLQGVLPALPQVVCNVR 60
QY 62 DVRFESIRLPGCGPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFDSSS 121
DB 61 DVRFESIRLPGCGPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFDSSS 120
QY 122 SKAPPPSLPSPRLPGSDT 141
DB 121 SKAPPPSLPSPRLPGSDT 140

RESULT 89
AAM27678
ID AAM27678 standard; protein: 145 AA.
XX AAM27678;
XX AAM27678;
XX 12-JAN-1998 (first entry)
XX Chorionic gonadotrophin beta subunit amino-terminal loop mutant.
XX Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
XX beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
XX contragestative medicament; cross-reactivity; luteinising hormone;
XX contraceptive; immunoassay; Kaposi sarcoma; inhibition;
XX neutralising antibody.
XX Homo sapiens.
XX Synthetic.
XX Key Location/Qualifiers
XX Misc-difference 20 /note= "wild type Lys replaced with Asn"
XX Misc-difference 21 /note= "wild type Glu replaced with Arg"
XX Misc-difference 22 /note= "wild type Gly replaced with Glu"
XX WO9704098-A2.
XX 06-FEB-1997.
XX 19-JUL-1996; 96WO-GB01717.
XX

```

```

PR 19-JUL-1995; 95GB-0014816.
XX (DELV/) DELVES P J.
XX (ROIT/) ROITT I M.
XX Delves PJ, Lund T, Roitt IM;
XX WPI: 1997-132639/12.
XX Modified beta-human chorionic gonadotrophin proteins - useful as
XX contragestative vaccine
XX Example; Page -: 23pp; English.
XX The present sequence is the human chorionic gonadotrophin beta
XX subunit (beta-hCG), amino-terminal loop mutant Lys20Asn, Glu21Arg,
XX Gly22Glu, which can be used in the preparation of a contragestative
XX medicament. The modified beta-hCG has reduced cross-reactivity with
XX luteinising hormone (LH), as defined by the ability of both
XX proteins to react with the immunoglobulin. The modified beta-hCG can
XX be used as a contraceptive immunogen. The modified beta-hCG can
XX specific immunoassay and for applications where hCG is active, e.g.
XX Kaposi sarcoma inhibition. The modified beta-hCG can produce
XX neutralising antibodies to beta-hCG, which do not cross-react with
XX other natural hormones.
XX N.B. Sequence not given in the specification, but constructed using
XX the wild type beta-hCG sequence given in nature 307 959460, 37-40
XX (1984).
XX Sequence 145 AA;

Query Match 95.9%; Score 744; DB 18; Length 145;
Best Local Similarity 97.1%; Pred. No. 4e-60;
Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

QY 2 SKPELRPCRPINATLAVEKEGCVICITVTTCAGYCTPTMRVLQGVLPALPQVVCNVR 61
DB 1 SKPELRPCRPINATLAVEKEGCVICITVTTCAGYCTPTMRVLQGVLPALPQVVCNVR 60
QY 62 DVRFESIRLPGCGPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFDSSS 121
DB 61 DVRFESIRLPGCGPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFDSSS 120
QY 122 SKAPPPSLPSPRLPGSDT 141
DB 121 SKAPPPSLPSPRLPGSDT 140

RESULT 90
AAR15102
ID AAR15102 standard; Protein: 145 AA.
XX AAR15102;
XX 11-FEB-1992 (first entry)
XX hCG/bhH chimera, D6.
XX Glycoprotein hormone; immuno-contraction;
XX immuno-contragestive; vaccine; human chorionic gonadotrophin;
XX luteinising hormone; LH; CG; bovine.
XX Homo sapiens.
XX Bos taurus.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91MO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX

```


PA (UTNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI: 1991-35328/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table IV; Page 63; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 89, 91, 92, 95 and 97 region - the region being
 XX useful for identifying residues which are important for binding to
 XX the human receptor and may also have applications as an immunogen,
 XX agonist and/or antagonist.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA:
 XX
 Query Match 95.6%; Score 743; DB 12; Length 145;
 Best Local Similarity 96.4%; Pred. No. Se-60; 4; Indels 0; Gaps 0;
 Matches 135; Conservative 1; Mismatches 1;
 QY 2 SKEPLRPRCPINATLAVEKGCPCVITVTTCAGTCPTMTVRVLOGVLPALPOVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKGCPCVITVTTCAGTCPTMTVRVLOGVLPALPOVVCNVR 60
 QY 62 DVRFESIRLPGCGPVNVPVSYVALSCQALCRSTTDCGPKDHPPLTCDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGPVNVPVSYVALSCQALCRSTTDCGPKDHPPLTCDPRFQDSSS 120
 QY 122 SKAPPSLPSPSLPGSDT 141
 DB 121 SKAPPSLPSPSLPGSDT 140
 RESULT 91
 AAR31006
 ID AAR31006 standard; protein: 145 AA.
 XX
 AC AAR31006;
 XX
 XT 14-MAY-1993 (first entry)
 DE Modified hCG beta-subunit - analogue "D".
 KW hCG; glycoprotein hormone analogue; human infertility; LH; FSH;
 KW luteinising hormone receptor; follicle stimulating hormone receptor;
 KW vertebate; polycystic ovarian disease.
 XX Homo sapiens.
 XX
 XX Key Location/Qualifiers
 FT Region 94..97 "non-hCG derived residues"
 FT Region 94..97
 FT Region /note- "D region - LH binding and specificity"
 FT Region 100..106
 FT /note- "G region - FSH binding and specificity"
 PN W09222568-A.
 XX
 XX 23-DEC-1992.
 XX
 XX 18-JUN-1992; 92NO-US05207.
 XX
 XX 18-JUN-1991; 91US-0717151.
 XX
 XX (UTNE-) UNIV MED NEW JERSEY.
 XX

PI Campbell RK, Moyle WR;
 XX WPI: 1993-018070/02.
 XX New alpha, beta-heterodimeric polypeptide deriva. - which bind to
 XX luteinising and follicle stimulating hormone receptors, useful for
 XX controlling the ratio of FSH to LH activity
 XX Disclosure: Page 21; 98pp; English.
 XX
 XX The sequence is that of a modified form of human chorionic gonadotrophin
 XX (hCG), analogue "D", in which amino acids in the "D" and/or "G" regions
 XX have been substituted resulting in changes in the binding specificity
 XX and avidity of luteinising hormone (LH) and follicle stimulating
 XX hormone (FSH) receptors. The modified hCG analogue may be used as
 XX beta-heterodimeric polypeptide having an affinity to vertebate LH
 XX and FSH receptors. Such an analogue can be prepared having a desired
 XX ratio of FSH:LH activity. The polypeptide may be used for treating
 XX human infertility or polycystic ovarian disease.
 XX
 XX Sequence 145 AA:
 XX
 Query Match 95.6%; Score 743; DB 14; Length 145;
 Best Local Similarity 96.4%; Pred. No. Se-60; 4; Indels 0; Gaps 0;
 Matches 135; Conservative 1; Mismatches 1;
 QY 2 SKEPLRPRCPINATLAVEKGCPCVITVTTCAGTCPTMTVRVLOGVLPALPOVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEKGCPCVITVTTCAGTCPTMTVRVLOGVLPALPOVVCNVR 60
 QY 62 DVRFESIRLPGCGPVNVPVSYVALSCQALCRSTTDCGPKDHPPLTCDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGPVNVPVSYVALSCQALCRSTTDCGPKDHPPLTCDPRFQDSSS 120
 QY 122 SKAPPSLPSPSLPGSDT 141
 DB 121 SKAPPSLPSPSLPGSDT 140
 RESULT 92
 AAR88923
 ID AAR88923 standard; protein: 145 AA.
 XX
 AC AAR88923;
 XX
 XT 13-JUL-1996 (first entry)
 DE HCG analogue-D beta-subunit.
 KW hCG; human; chorionic gonadotrophic; beta-subunit; heterodimer;
 KW alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;
 KW D-region; G-region; protein engineering; fertility; hormone;
 KW follicle stimulating hormone; luteinising hormone; TSH;
 KW ovulation; spermatogenesis.
 XX Homo sapiens.
 XX
 XX Key Location/Qualifiers
 FT Region 1..93
 FT /note- "HCG sequence"
 FT Region 94..97
 FT /note- "Human FSH D-region"
 FT Region 98..145
 FT /note- "HCG sequence"
 PN US5508261-A.
 XX
 XX 16-APR-1996.
 XX
 XX 18-JUN-1991; 91US-0717151.
 XX
 XX 21-JAN-1994; 94US-0184408.
 XX
 XX 18-JUN-1991; 91US-0717151.
 XX

```

PR 18-AUG-1993; 95US-0108945.
XX 18-APR-1995; 95US-0425673.
XX (UYNE-) UNIV NEW JERSEY.
XX
XX Campbell RK, Han Y, Macdonald GJ, Moyle WR, Wang Y;
XX
XX WPI; 1996-208744/21..
XX
XX New alpha, beta-heterodimeric glycoo:protein hormone polypeptide(s)
XX - having a non-naturally occurring beta subunit derived from hCG,
XX LH, FSH and TSH
XX
XX Example 1: Column 11-12; 27pp; English.
XX
XX The sequence is an example of a glycoprotein hormone beta-chain
XX analogue used to construct an alpha,beta-heterodimer polypeptide
XX with altered binding affinity to LH receptor and FSH receptor. The
XX beta-subunit containing hCG,LH,FSH and TSH subunit and a dimeric
XX binding activity and specificity may be altered without disrupting
XX heterodimer formation or reaction with antibodies. The D-region of
XX hCG is most important for LH receptor binding, and the G-region is
XX most important for FSH binding. Analogue-D, with an FSH D-region,
XX binds to an LH receptor with considerably lower potency than hCG,
XX and does not bind to LH receptors. A cDNA for analogue-D may be
XX expressed in cell culture. This type of hormone analogue
XX may be useful clinically for infertile couples who have a problem with
XX polycystic ovary disease, or to increase spermatogenesis in
XX azoospermic males who have some circulating LH.
XX
XX Sequence 145 AA:
XX
XX Query Match 95-69; Score 743; DB 17; Length 145;
XX Best Local Similarity 96.4%; Pred; No. 5e-60; 4: Indels 0; Gaps
XX Matches 135; Conservative 1; Mismatches
XX
XX QY 2 SKEPLRPRCPINATLAVKEGGPCVITVNTICAGYCPTRVLQGVLPALPOVCNVR 61
XX DB. 1 SKEPLRPRCPINATLAVKEGGPCVITVNTICAGYCPTRVLQGVLPALPOVCNVR 60
XX
XX QY 62 DYVFESINLPCCPRGNVPVSYVALSCGALCRRSTDCGGCFORPITCDOPRFQDSS 121
XX DB 61 DYVFESINLPCCPRGNVPVSYVALSCGALCRRSTDCGGCFORPITCDOPRFQDSS 120
XX
XX QY 122 SKAPPPSLPSRLPGPDSPT 141
XX DB 121 SKAPPPSLPSRLPGPDSPT 140
XX
XX RESULT 93
XX ID AAE04518
XX AA AAE04518 standard; Protein: 265 AA.
XX AA AAE04518;
XX
XX DT 04-SEP-2001 (first entry)
XX
XX Human single chain gonadotropin analog no:1b.
XX
XX Human; single chain gonadotropin analog no:1b; anti-infertility; drug;
XX peptide therapy; lutensin hormone; LH; follicle stimulating hormone;
XX FSH; Chrydrol stimulating hormone; TSH; chorionic gonadotropin; CG;
XX glycoprotein; infertility; fusion protein; mutant; mutein.
XX
XX OS Homo sapiens.
XX Synthetic.
XX
XX Key Location/Qualifiers
XX Region 21..165
XX /note: *Corresponds to 1-145 amino acids of human
XX chorionic gonadotropin (CG) beta-subunit"
XX
XX Misc-difference 33

```

CC hormone-specific vaccines for use in humans.
 CC Noted: present sequence is not shown in the specification, but is
 CC notified in the human single chain gonadotropin analog no.1 shown
 CC as SEQ ID NO: 3, in Figure 5 of the specification (A060474).
 XX
 SQ Sequence 265 AA;
 Query Match 95.6%; Score 743; DB 22; Length 265;
 Best Local Similarity 97.1%; Pred. No. 9.2e-60;
 Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;
 OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTVRVLOGVLPALPOVQNYR 61
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTVRVLOGVLPALPOVQNYR 80
 OY 62 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKORHPLTCDPRFQSSS 121
 DB 81 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKORHPLTCDPRFQSSS 140
 OY 122 SKAPPSLPSPRLPGPSDT 141
 DB 141 SKAPPSLPSPRLPGPSDT 160
 RESULT 94
 AAR15063
 ID AAR15063 standard; Protein; 145 AA.
 XX
 AC AAR15063;
 XX
 DT 11-FEB-1992 (first entry)
 XX
 DE hCG/hFSH chimera, B3.
 XX
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragester; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX
 OS Homo sapiens.
 XX
 PN WO9116922-A.
 XX
 PD 14-NOV-1991.
 XX
 PF 07-MAY-1991; 91MO-US031162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 PA (UYNE-) UNIV MED NEW JERSEY.
 XX
 PI Campbell RK, Moyle WR;
 XX
 DR WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragesteric vaccines.
 XX
 Table II; Page 61; 94pp; English.
 XX
 CC The sequence is an analogue of mature hCG beta subunit having
 CC residues 39, 41, 42 and 43 replaced by the corresponding
 CC residues in the hFSH protein. It was prepd. by site directed
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit.
 CC The chimeric hormone is capable of directing hormone binding to
 CC both LH and FSH receptors and may be useful for the treatment of
 CC infertility in men and women and the promotion of fertility in male
 CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).
 XX
 SQ Sequence 145 AA;
 Query Match 95.4%; Score 741; DB 12; Length 145;
 CC

Best Local Similarity 97.1%; Pred. No. 7.6e-60;
 Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;
 OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTVRVLOGVLPALPOVQNYR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTVRVLOGVLPALPOVQNYR 60
 OY 62 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKORHPLTCDPRFQSSS 121
 DB 61 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKORHPLTCDPRFQSSS 120
 OY 122 SKAPPSLPSPRLPGPSDT 141
 DB 121 SKAPPSLPSPRLPGPSDT 140
 RESULT 95
 AAY87479
 ID AAY87479 standard; peptide; 145 AA.
 XX
 AC AAY87479;
 XX
 DT 18-JUL-2000 (first entry)
 XX
 DE Human chorionic gonadotropin beta subunit.
 XX
 KW Human chorionic gonadotropin beta subunit; hCG-beta; epitope homopolymer;
 KW immunogen; (c); antibody production; immunocontraction; abortifacient;
 KW vaccine; fertility control.
 XX
 OS Homo sapiens.
 XX
 FH Key Location/Qualifiers
 FT Misc-difference 37
 FT Misc-difference /label- unknown
 FT Misc-difference 59
 FT Misc-difference /label- unknown
 FT Misc-difference 82
 FT Misc-difference /label- unknown
 XX
 PN US6039948-A.
 XX
 PD 21-MAR-2000.
 XX
 PF 06-JUN-1995; 95US-0469043.
 XX
 XX 25-AUG-1978; 78US-0916876.
 PR 25-JUL-1977; 78US-0916876.
 PR 25-JUL-1977; 90US-0916876.
 PR 17-FEB-1989; 89US-0311331.
 PR 07-MAY-1973; 73US-0157892.
 PR 16-OCT-1973; 73US-0406821.
 PR 22-APR-1974; 74US-0462955.
 PR 14-OCT-1975; 75US-0622031.
 PR 16-JAN-1980; 80US-0112628.
 PR 20-NOV-1981; 81US-0323690.
 PR 04-MAR-1983; 83US-0472190.
 PR 19-MAY-1983; 83WO-US000777.
 PR 02-NOV-1984; 84US-0667863.
 XX
 XX (OHIS) UNIV OHIO STATE.
 XX
 PI Stevens VC;
 XX
 DR WPI; 2000-270119/23.
 XX
 PT Antigenically modified polypeptides useful for treating cancer,
 PT hypertension, diabetes and associated vascular diseases comprises
 PT immunogenic polypeptides conjugated to carrier moieties -
 XX
 XX Example VIII; Column 18; 56pp; English.
 XX
 CC The invention relates to a polypeptide linear homopolymer comprising

CC three or more peptide monomers which may be used as an
 CC immunocontraceptive and/or abortifacient. The peptide monomers are
 CC peptides derived from the C-terminal portion of the human chorionic
 CC gonadotropin beta subunit (hCG-beta) comprising either residues 105-145
 CC or residues 112-145 of hCG-beta (hA87480). By
 CC themselves the peptide monomers are incapable of inducing the
 CC homopolymer is capable of inducing anti-hCG antibody production. hCG
 CC plays a role in the maintenance of pregnancy, and has also been shown to
 CC induce ovulation and stimulate corpus luteum function. Anti-hCG
 CC antibodies raised against the homopolymer of the invention are not
 CC cross-reactive with luteinising hormone (LH). The first 110 residues of
 CC hCG-beta are virtually identical to those of LH, and prior art anti-hCG
 CC antibodies have had significant cross-reactivity with LH. The anti-hCG
 CC antibodies are thought to cause early abortion by neutralising CG in the
 CC peripheral blood and disrupting trophic hormone support to the corpus
 CC luteum. The pregnancy is disrupted almost immediately after
 CC induction of the abortion. The hCG peptide homopolymer is therefore useful in the
 CC control of female fertility. The present sequence represents the beta
 CC subunit of human chorionic gonadotropin which was used in an
 CC exemplification of the present invention.

xx Sequence 145 AA:
 Query Match 95.4%; Score 741; DB 21; Length 145;
 Best Local Similarity 97.1%; Pred. No. 7; 6e-60;
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

QY 2 SKEPLRCPRIATLAVEKEGCPVITVNTICAGYCTMTVRVLSQVLPALPQVNCNR 61
 Db 1 SKEPLRCPRIATLAVEKEGCPVITVNTICAGYCTMTVRVLSQVLPALPQVNCNR 60
 QY 62 DVRFESIRLPGCPGVNPPVYVAVALSCQALCRSTTDCGPKDRHPLTCDPFRQSSS 121
 Db 61 DVRFESIRLPGCPGVNPPVYVAVALSCQALCRSTTDCGPKDRHPLTCDPFRQSSS 120
 QY 122 SKAPPSLPSRLGPSDT 141
 Db 121 SKAPPSLPSRLGPSDT 140

RESULT 96
 AAY43275
 ID AAY43275 standard; Protein: 204 AA.

XX AC AAY43275;
 XX 19-JAN-2000 (first entry)
 XX Human CG beta subunit-Jun fusion protein sequence.
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;
 KW beta subunit; therapy; Jun.

XX Homo sapiens.
 OS Synthetic.
 XX W09953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99WO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-J) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 DR N-PS06; ANZ31751.

xx Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 xx Example 3; Fig 13; 73pp; English.

CC This sequence represents a fusion protein of the human chorionic
 CC gonadotropin (hCG) beta subunit and Jun. The invention relates to a
 CC method of forming a cysteine knot protein (1) having alpha and
 CC beta subunits comprising attaching a dimerisation domain (DD) to either
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and
 CC to the C-terminus of the beta-subunit and dimerising the products to form
 CC a heterodimeric protein analog (11). The method is used to produce
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein
 CC hormones, potentially useful, e.g. for treating infertility where caused
 CC by polycystic ovarian disease (associated with excessive levels of
 CC luteinising hormone). Subunits that retain their individual biological amino
 CC acid sequences (such as a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.

xx Sequence 204 AA:

Query Match 95.2%; Score 740; DB 20; Length 204;
 Best Local Similarity 99.3%; Pred. No. 1.3e-59;
 Matches 135; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 6 LRPCRPIATLAVEKEGCPVITVNTICAGYCTMTVRVLSQVLPALPQVNCNDRVF 65
 Db 64 LRPCRPIATLAVEKEGCPVITVNTICAGYCTMTVRVLSQVLPALPQVNCNDRVF 123
 QY 66 ESIRLPGCPGVNPPVYVAVALSCQALCRSTTDCGPKDRHPLTCDPFRQSSSKAP 125
 Db 124 ESIRLPGCPGVNPPVYVAVALSCQALCRSTTDCGPKDRHPLTCDPFRQSSSKAP 183
 QY 126 PPSLPSRLGPSDT 141
 Db 184 PPSLPSRLGPSDT 199

RESULT 97
 AAW33358
 ID AAW33358 standard; Protein: 307 AA.

XX AC AAW33358;
 XX 19-MAR-1998 (first entry)
 XX TBP(20-161)/hCG-beta fusion protein.
 DE Fusion protein; thrombopoietin; TPO; human chorionic gonadotropin;
 KW beta subunit; hCG-beta.

XX Homo sapiens.
 OS Key
 XX CDS Location/Qualifiers
 XX 279..1202
 XX /*tag= a
 XX W09730161-A1.
 XX 21-AUG-1997.
 XX 20-FEB-1997; 97WO-US02315.
 XX 20-FEB-1996; 96US-0011936.

PA (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.

XX Campbell RK, Chappel SC, Jameson BA;

XX WPI: 1997-425036/39.

XX N-PSDB; ANT94008.

XX Hybrid dimeric protein comprising two co-expressed units - each
PT based on receptor or ligand and a subunit of a heterodimeric
PT hormone, especially FSH, for inducing follicular maturation

XX Example; Pages 34-35; 60pp; English.

XX A novel fusion protein comprises 2 dimer forming co-expressed amino
CC acid sequences, each consisting of a homodimeric or heterodimeric
CC receptor chain or ligand, with ligand-receptor binding activity,
CC heterodimeric protein hormone capable of forming a heterodimer with
CC the hormone's other subunits. The fusion protein, e.g. the
CC thrombopoietin (TPO)/human chorionic gonadotrophin-beta subunit
CC (hCG-beta) fusion protein denoted by the present sequence,
CC significantly increases the biological activity of the hormone
CC component, reducing the requirement for hormone itself and the
CC number of injections needed.

XX Sequence 307 AA;

Query Match 95.2%; Score 740; DB 18; Length 307;
Best Local Similarity 100.0%; Pred. No. 2e-59;
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 8 PRCPINATLAVEKEGCPVCITVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRFES 67

DB 169 PRCPINATLAVEKEGCPVCITVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRFES 228

OY 68 IRLPCPCPGVNPVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSSKAPPP 127

DB 229 IRLPCPCPGVNPVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSSKAPPP 288

OY 128 SLPSRLPGPST 141

DB 289 SLPSRLPGPST 302

RESULT 98

AWJ3360

XX AAW33360 standard; Protein; 336 AA.

XX AC AAW33360;

XX 19-MAR-1998 (first entry)

XX TBP(20-190)/hCG-beta fusion protein.

XX Fusion protein; thrombopoietin; TPO; human chorionic gonadotrophin;

XX beta subunit; hCG-beta.

XX Homo sapiens.

XX WO9730161-A1.

XX 21-AUG-1997.

XX 20-FEB-1997; 97WO-US02315.

XX 20-FEB-1996; 96US-0011936.

XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.

XX Campbell RK, Chappel SC, Jameson BA;

XX WPI: 1997-425036/39.

XX N-PSDB; ANT94022.

XX

PT

PT

XX

PS

XX

XX

CC

CC

CC

CC

CC

CC

CC

CC

CC

CC

CC

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX

XX Hybrid dimeric protein comprising two co-expressed units - each
PT based on receptor or ligand and a subunit of a heterodimeric
PT hormone, especially FSH, for inducing follicular maturation

Example; Pages 39-40; 60pp; English.

XX A novel fusion protein comprises 2 dimer forming co-expressed amino
CC acid sequences, each consisting of a homodimeric or heterodimeric
CC receptor chain or ligand, with ligand-receptor binding activity,
CC bound directly or via a peptide linker to a subunit of a
CC heterodimeric protein hormone capable of forming a heterodimer with
CC the hormone's other subunits. The fusion protein, e.g. the
CC thrombopoietin (TPO)/human chorionic gonadotrophin-beta subunit
CC (hCG-beta) fusion protein denoted by the present sequence,
CC significantly increases the biological activity of the hormone
CC component, reducing the requirement for hormone itself and the
CC number of injections needed.

XX Sequence 336 AA;

Query Match 95.2%; Score 740; DB 18; Length 336;
Best Local Similarity 100.0%; Pred. No. 2.2e-59;
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 8 PRCPINATLAVEKEGCPVCITVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRFES 67

DB 198 PRCPINATLAVEKEGCPVCITVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRFES 257

OY 68 IRLPCPCPGVNPVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSSKAPPP 127

DB 258 IRLPCPCPGVNPVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSSKAPPP 317

OY 128 SLPSRLPGPST 141

DB 318 SLPSRLPGPST 331

RESULT 99

AAR15097

XX AAR15097 standard; Protein; 145 AA.

XX AC AAR15097;

XX 11-FEB-1992 (first entry)

XX hCG/BLH chimera, DL.

XX Glycoprotein hormone; immuno-castration;

XX immuno-contragestive; vaccine; human chorionic gonadotrophin;

XX lutealising hormone; LH; CG; Bovine.

XX Homo sapiens.

XX Bos taurus.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US031162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-castration agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX

CG	AAR15161-R15198).
XX	Sequence 145 AA;
SQ	
OY	Query Match 95.0%; Score 738; DB 12; Length 145;
Dy	Best Local Similarity 93.6%; Pred. No. 1.4e-59;
Matches	131; Conservative 8; Mismatches 1; Indels 0; Gaps 0;
OY	2 SKELPRPCRPINATLAVKSGCVCIFVNTTCGAGCTPTTRVLQGVLPALPQVCCNR 61
Dy	1 SKELPRPCRPINATLAVKSGCVCIFVNTTCGAGCTPTTRVLQGVLPALPQVCCNR 60
OY	62 DYRFESILRGCPGCVNPVVSYAVALSCQCALCRSTTDCGPDHPITCDPRPODSSS 121
Dy	61 ELVETVRVGCPCPVNPVVSYAVALSCQCALCRSTTDCGPKDPHPLTCDPRPODSSS 120
OY	122 SKAPPPSLPSRLPGSPDT 141
Dy	121 SKAPPPSLPSRLPGSPDT 140
RESULT 101	
AAR15089	
ID	AAR15089 standard; Protein: 145 AA.
XX	AAR15089;
Dx	11-FEB-1992 (first entry)
XX	hcGG/HTSH chimera, C2.
DE	Glycoprotein hormone: fertility; immuno-castration;
KW	immuno-contra-gestive; vaccine; human chorionic gonadotropin;
KW	thyroid stimulating hormone; TSH; CG;
OS	Homo sapiens.
XX	WO9116922-A.
PX	14-NOV-1991.
PD	
PF	07-MAY-1991; 91WO-US03162.
PR	08-MAY-1990; 90US-0520703.
XX	(UYNE-) UNIV MED NEW JERSEY.
XA	Campbell RK, Hoyle WR;
PI	NPI; 1991-353528/48.
XX	New glyco-protein hormone analogues - for inducing fertility as
PT	immuno-castration agents, for suppressing reproductive system
PT	development and as immuno-contra-gestive vaccines.
Table III:	Page 62; 94pp; English.
XX	The sequence is an analogue of mature HCG beta subunit having
CC	residues 20-22, 24, 25, 27 and 29 replaced by the corresponding
CC	residues in the HTSH protein. The chimeric hormone may be useful
CC	as a TSH antagonist for the treatment of hyperthyroidism.
CC	See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX	Sequence 145 AA;
SQ	
OY	Query Match 95.0%; Score 738; DB 12; Length 145;
Dy	Best Local Similarity 93.6%; Pred. No. 1.4e-59;
Matches	133; Conservative 3; Mismatches 4; Indels 0; Gaps 0;
OY	2 SKELPRPCRPINATLAVKSGCVCIFVNTTCGAGCTPTTRVLQGVLPALPQVCCNR 61
Dy	1 SKELPRPCRPINATLAVRRCAYCLTINTTCGAGCTPTTRVLQGVLPALPQVCCNR 60

OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 120
 OY 122 SKAPPSLSPSRLPGPSDT 141
 DB 121 SKAPPSLSPSRLPGPSDT 140

RESULT 102
 AAR15091
 ID AAR15091 standard; Protein: 145 AA.
 XX AAR15091;
 XX 11-FEB-1992 (first entry)
 XX hCG/hTSH chimera, C4.
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW thyroid stimulating hormone; TSH; CG;
 XX Homo sapiens.
 XX W09116922-A.
 PD 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 PF 07-MAY-1991; 91WO-US03162.
 PR 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI: 1991-353528/48.
 DR New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-contragestive agents for suppressing reproductive system
 development and as immuno-contragestive vaccines.
 XX Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 62-69 replaced by the corresponding residues in the hTSH
 CC protein. The chimeric hormone may be useful as a TSH antagonist
 CC at the treatment of hyperthyroidism.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA:
 Query Match 95.0%; Score 738; DB 12; Length 145;
 Best Local Similarity 94.3%; Pred. No. 1.4e-59;
 Matches 132; Conservative 4; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVERECPCVITNTTICAGYCPMTNRYLQGLPALPQVYCNR 61
 DB 1 SKEPLRPRCPINATLAVERECPCVITNTTICAGYCPMTNRYLQGLPALPQVYCNR 60
 OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 120
 OY 122 SKAPPSLSPSRLPGPSDT 141
 DB 121 SKAPPSLSPSRLPGPSDT 140

RESULT 103
 AAR15062
 ID AAR15062 standard; Protein: 145 AA.

XX AAR15062;
 AC 11-FEB-1992 (first entry)
 DT hCG/hFSH chimera, B2.
 XX Glycoprotein hormone; fertility; immuno-castration;
 XX immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 XX W09116922-A.
 PD 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 PR 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI: 1991-353528/48.
 DR New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-contragestive agents for suppressing reproductive system
 development and as immuno-contragestive vaccines.
 XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 22, 24, 25, 28, 29 and 33 replaced by the corresponding
 CC residues in the hFSH protein. It was pred. by site directed
 CC mutagenesis of a chimeric sequence encoding the hCG beta subunit
 CC and the hFSH protein. The chimeric hormone may be useful to
 CC both LH and FSH receptors and may be useful for the treatment of
 CC infertility in men and women and the promotion of fertility in male
 CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).

XX Sequence 145 AA:
 Query Match 94.7%; Score 736; DB 12; Length 145;
 Best Local Similarity 95.7%; Pred. No. 2.1e-59;
 Matches 134; Conservative 2; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVERECPCVITNTTICAGYCPMTNRYLQGLPALPQVYCNR 61
 DB 1 SKEPLRPRCPINATLAVERECPCVITNTTICAGYCPMTNRYLQGLPALPQVYCNR 60
 OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCQALCRSTTDCGGPKDHPDLTCDPRFQDSSS 120
 OY 122 SKAPPSLSPSRLPGPSDT 141
 DB 121 SKAPPSLSPSRLPGPSDT 140

RESULT 104
 AAR27683
 ID AAR27683 standard; Protein: 145 AA.
 AC AAR27683;
 AC 12-JAN-1998 (first entry)
 DT Chorionic gonadotropin beta subunit carboxy-terminal loop mutant.
 DE Human; chorionic gonadotropin; chorionic gonadotropin; beta-hCG;
 XX

KW beta subunit; carboxy-terminal loop; mutant; reduction; vaccine;
 KW contragestative; cross-reactivity; luteinising hormone;
 KW neutralising antibody.
 XX Homo sapiens.
 OS Synthetic.
 XX
 PH Key Location/Qualifiers
 FT Misc-difference 68
 FT /note= "wild type Arg replaced with Glu"
 FT Misc-difference 74
 FT /note= "wild type Arg replaced with Ser"
 FT Misc-difference 75
 FT /note= "wild type Gly replaced with His"
 FT Misc-difference 79
 FT /note= "wild type Val replaced with His"
 XX W09704098-A2.
 XX
 XX PD 06-FEB-1997.
 XX
 XX PF 19-JUL-1996; 96WO-G801717.
 XX
 XX PR 19-JUL-1995; 95CB-0014816.
 XX (DELV/) DELVES P.J.
 XX (ROIT/) ROITT I.M.
 XX
 XX PI Delves PJ, Lund T, Roitt IM;
 XX WPI: 1997-132639/12.
 XX
 XX DR Modified beta-human chorionic gonadotrophin proteins - useful as
 XX PT contragestative vaccine
 XX
 XX Example; Page -: 23pp; English.
 XX
 XX The present sequence is the human chorionic gonadotrophin beta
 CC subunit (beta-hCG). Carboxy-terminal loop mutant Arg68Glu,
 CC Arg74Ser, Gly75His, Val79His, which can be used in the preparation
 CC of a contragestative medicament. The modified beta-hCG has reduced
 CC cross-reactivity with luteinising hormone (LH), as defined by the
 CC ability of both proteins to react with the same antibody. The
 CC modified beta-hCG can be used as a contraceptive in females, in a
 CC vaccine, in a hCG specific immunoassay and for applications where
 CC hCG is active, e.g. Kaposi sarcoma inhibition. The modified
 CC beta-hCG can produce neutralising antibodies to beta-hCG, which do
 CC not cross-react with other hCG subunits.
 CC N.B. Sequence not given in the specification, but constructed using
 CC the wild type beta-hCG sequence given in nature 307 559460, 37-40
 CC (1984).
 XX
 XX SQ Sequence 145 AA:
 Query Match 94.7%; Score 736; DB 18; Length 145;
 Best Local Similarity 96.4%; Pred. No. 2.le-59;
 Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0:
 OY 2 SKEPLPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61
 Db 1 SKEPLPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 60
 OY 62 DYRFESIRLPCPGPNVYVAVALSCQALCRSTTDCGPKDHPHLCDDPRFQDSSS 121
 Db 61 DYRFESIRLPCPGPNVYVAVALSCQALCRSTTDCGPKDHPHLCDDPRFQDSSS 120
 OY 122 SKAPPSLPSPSLRPGSDT 141
 Db 121 SKAPPSLPSPSLRPGSDT 140
 RESULT 105
 ID AAR15109 standard; Protein; 145 AA.
 AC AAR15109;
 XX
 XX 11-FEB-1992 (first entry)
 XX hCG/eLH chimera, E1.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG.

AAR15116
 ID AAR15116 standard; Protein; 145 AA.
 AC AAR15116;
 XX
 XX 11-FEB-1992 (first entry)
 XX hCG/eLH chimera, A3.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG.
 XX Homo sapiens.
 OS
 XX W09116922-A.
 XX
 XX PD 14-NOV-1991.
 XX
 XX PF 07-MAY-1991; 91MO-US03162.
 XX
 XX PR 08-MAY-1990; 90US-0520703.
 XX
 XX PA (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX
 XX PT New glyco-protein hormone analogues - for inducing fertility as
 XX PT immuno-castration agents, for suppressing reproductive system
 XX PT development and as immuno-contragestive vaccines.
 XX
 XX Table VI; Page 65; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 77, 82, 83, 89, 91, 92 and 99 replaced by the corresponding
 CC residues in the human LH protein. The human LH protein may be
 CC produced in the human placenta and in the placenta of women and the
 CC promotion of fertility in male and female animals.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX SQ Sequence 145 AA:
 Query Match 94.6%; Score 735; DB 12; Length 145;
 Best Local Similarity 95.0%; Pred. No. 2.6e-59;
 Matches 133; Conservative 3; Mismatches 4; Indels 0; Gaps 0:
 OY 2 SKEPLPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61
 Db 1 SKEPLPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 60
 OY 62 DYRFESIRLPCPGPNVYVAVALSCQALCRSTTDCGPKDHPHLCDDPRFQDSSS 121
 Db 61 DYRFESIRLPCPGPNVYVAVALSCQALCRSTTDCGPKDHPHLCDDPRFQDSSS 120
 OY 122 SKAPPSLPSPSLRPGSDT 141
 Db 121 SKAPPSLPSPSLRPGSDT 140
 RESULT 106
 ID AAR15109 standard; Protein; 145 AA.
 AC AAR15109;
 XX
 XX 11-FEB-1992 (first entry)
 XX hCG/eLH chimera, E1.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG.

KW luteinising hormone; LH; CG; equine; horse.

OS Homo sapiens.

OS Equus caballus.

PN W09116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91MO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-castration agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX Table V; Page 64; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having

XX residues 40, 42, 45-48, 52, and 55 replaced by the corresponding

XX residues in the equine LH protein. The chimeric hormone may be

XX useful for identifying residues which are important for binding to

XX the human receptor and may also have applications as an immunogen,

XX agonist and/or antagonist.

XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA;

Query Match 94.5%; Score 735; DB 12; Length 145;

Best Local Similarity 94.5%; Pred. No. 2, 6e-59;

Matches 132; Conservative 3; Mismatches 5; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPSTMTYVLOGVLPALPOVCNVR 61

DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPSTMTYVLOGVLPALPOVCNVR 60

OY 62 DVRFESIRLPCRGVNPVYSVALSCOCALCRSTTDCGGPKDHLPTCDPRQDSSS 121

DB 61 DVRFESIRLPCRGVNPVYSVALSCOCALCRSTTDCGGPKDHLPTCDPRQDSSS 120

OY 122 STAPPSLPSPKLPSPDT 141

DB 121 STAPPSLPSPKLPSPDT 140

RESULT 107

AAR86269

ID AAR86269 standard; Protein: 265 AA.

XX AAR86269;

XX 08-MAY-1996 (first entry)

XX Single chain gonadotropin analogue 1b with extra glycosylation site.

XX Single chain gonadotropin; human chorionic gonadotropin; hCG;

XX alpha; beta; subunit; analogue; glycoprotein hormone; fertility;

XX inhibit; stimulate; increase; lutropin; luteinising hormone; LH;

XX follicle stimulating hormone; FSH; vaccine; contraceptive.

XX Synthetic.

OS Key

PH Peptide

FT Location/Qualifiers

FT 1..20

FT /label= leader

FT 21..165

FT Region

FT Misc-difference 33 /label= hCG_beta_subunit_(1-145)

FT Note= "Wild-type Asn at position 13 of the beta-

FT subunit is opt. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation

FT site"

FT Misc-difference 50

FT Note= "Wild-type Asn at position 30 of the beta-

FT subunit is opt. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation

FT site"

FT Misc-difference 70

FT Note= "Arg corresponds to CCG codon"

FT Misc-difference 98

FT Note= "Wild-type Pro at position 78 of the beta-

FT subunit is opt. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation

FT site"

FT Misc-difference 99

FT Note= "Wild-type Val at position 79 of the beta-

FT subunit is replaced by Thr to agree with

FT the glycosylation site motif"

FT Region 166..173

FT /label= linker

FT Region 174..265

FT /label= Gonadotropin_alpha_subunit_(1-92)

FT Misc-difference 22

FT Note= "Wild-type Asn at position 52 of the alpha-

FT subunit is opt. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation

FT site"

FT Misc-difference 251

FT Note= "Wild-type Asn at position 78 of the alpha-

FT subunit is opt. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation

FT site"

FT MO9522340-A1.

XX 24-AUG-1995.

XX 17-FEB-1995; 95MO-US02067.

XX 18-FEB-1994; 94US-0199382.

XX (SENS-) SENSI-TEST.

XX Moyle WR;

XX WPI; 1995-302553/39.

XX Methods for altering fertility in mammals, esp. humans - e.g.

XX stimulating fertility by reducing the activity and/or levels of

XX circulating glyco-protein hormones having lutropin activity

XX Example 25; Fig 6 and Page 60; 102pp; English.

XX The single-chain gonadotropin analogue 1b (human CG-beta(1-145)

XX [N13X.N30X.P78X.V79T]-linker-human CG-alpha(1-92)[N52X.N78X]) is

XX an example of a chimeric glycopeptide hormone having an extra

XX glycosylation site. Addition of oligosaccharides has a positive

XX effect on stability of hormones in circulation and can be used to

XX protect against degradation of the protein.

XX Placenta has anti-luteinizing hormone (lutropin) activity and can

XX be used for facilitating ovulation, terminating pregnancy and

XX reducing androgen secretion.

XX Sequence 265 AA;

Query Match 94.5%; Score 734; DB 16; Length 265;

Best Local Similarity 96.4%; Pred. No. 6e-59;

Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPSTMTYVLOGVLPALPOVCNVR 61

```

||||| 21 SKEPLPRCPINATLAVEKGCPCVITVNTTICAGYCTMTVRLQGLRALPQVVCNVR 80
Qy 62 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 81 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 140
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 141 SKAPPSPSPSLRPGPSDT 160

RESULT 108
AARI5168
ID AARI5168 standard; Protein; 141 AA.
AC AARI5168;
XX
DT 11-FEB-1992 (first entry)
XX
DE HCG deletion mutant, F8.
XX
KW Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
XX Homo sapiens.
XX
PN WO9116922-A.
XX
PD 14-NOV-1991.
XX
PF 07-MAY-1991; 91WO-US03162.
XX
PR 08-MAY-1990; 90US-0320703.
XX
PA (UYNE-) UNIV MED NEW JERSEY.
XX
PI Campbell RK, Moyle WR;
XX
DR WPI; 1991-353528/48.
XX
PS New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
PS Table VII; Page 66; 94pp: English.
XX
CC The sequence is an analogue of mature hCG beta subunit having
CC residues 42-50. The residues 42-50 are changed from alanine to
CC proline. When combined with the subunit 1, the resultant has
CC been shown to bind LH receptors and stimulate hCG induced cyclic AMP
CC accumulation at ca. 50% the efficacy of hCG. This reduces the
CC steroidogenic potency of the analogue. It may be useful as an agonist
CC for suppression of gonadal activity during chemotherapy.
CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.
XX
SQ Sequence 141 AA:
Query Match 94.2%; Score 732; DB 12; Length 141;
Best Local Similarity 96.4%; Pred. No. 4.8e-59;
Matches 135; Conservative 0; Mismatches 1; Indels 4; Gaps 1;

Qy 2 SKEPLPRCPINATLAVEKGCPCVITVNTTICAGYCTMTVRLQGLRALPQVVCNVR 61
Db 1 SKEPLPRCPINATLAVEKGCPCVITVNTTICAGYCTMTVRLQGLRALPQVVCNVR 56
Qy 62 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 57 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 116
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 117 SKAPPSPSPSLRPGPSDT 136

```

```

RESULT 109
AARI5125
ID AARI5125 standard; Protein; 145 AA.
AC AARI5125;
XX
DT 11-FEB-1992 (first entry)
XX
DE hCG/hLH chimera, A10.
XX
KW Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW luteinising hormone; LH; CG.
XX Homo sapiens.
XX
PN WO9116922-A.
XX
PD 14-NOV-1991.
XX
PF 07-MAY-1991; 91WO-US03162.
XX
PR 08-MAY-1990; 90US-0520703.
XX
PA (UYNE-) UNIV MED NEW JERSEY.
XX
PI Campbell RK, Moyle WR;
XX
DR WPI; 1991-353528/48.
XX
PS New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
PS Table VI; Page 65; 94pp: English.
XX
CC The sequence is an analogue of mature hCG beta subunit having
CC residues 42-50. The residues 42-50 are changed from alanine to
CC proline. When combined with the subunit 1, the resultant has
CC been shown to bind LH receptors and stimulate hCG induced cyclic AMP
CC accumulation at ca. 50% the efficacy of hCG. This reduces the
CC steroidogenic potency of the analogue. It may be useful as an agonist
CC for suppression of gonadal activity during chemotherapy.
CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.
XX
SQ Sequence 145 AA:
Query Match 94.2%; Score 732; DB 12; Length 145;
Best Local Similarity 95.0%; Pred. No. 4.9e-59;
Matches 133; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

Qy 2 SKEPLPRCPINATLAVEKGCPCVITVNTTICAGYCTMTVRLQGLRALPQVVCNVR 61
Db 1 SKEPLPRCPINATLAVEKGCPCVITVNTTICAGYCTMTVRLQGLRALPQVVCNVR 60
Qy 62 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 61 DVRFESIRLPCGPGVNPVSVYVALSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 120
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 121 SKAPPSPSPSLRPGPSDT 140

RESULT 110
AARI5092
ID AARI5092 standard; Protein; 145 AA.
AC AARI5092;
XX
DT 11-FEB-1992 (first entry)
XX
DE hCG/NTSH chimera, C5.

```

```

XX Glycoprotein hormone; fertility; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW thyroid stimulating hormone; TSH; CG;
XX Homo sapiens.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX Table III; Page 62; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 74, 75, 77, 79, 80 and 83 replaced by the corresponding
CC residues in the hTSH protein. The chimeric hormone may be useful
CC as a TSH antagonist for the treatment of hyperthyroidism.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 145 AA;
Query Match 94.24; Score 732; DB 12; Length 145;
Best Local Similarity 93.74; Pred. No. 4.9e-59;
Matches 134; Conservative 0; Mismatches 6; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 60
QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 121
DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 120
QY 122 SKAPPSLPSPSRPQSDT 141
DB 121 SKAPPSLPSPSRPQSDT 140
RESULT 111
AAR15164
ID AAR15164 standard; Protein: 133 AA.
XX AC AAR15164;
XX 11-FEB-1992 (first entry)
XX hCG deletion mutant, F4.
XX Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
XX Homo sapiens.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX Table III; Page 62; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 74, 75, 77, 79, 80 and 83 replaced by the corresponding
CC residues in the hTSH protein. The chimeric hormone may be useful
CC as a TSH antagonist for the treatment of hyperthyroidism.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 145 AA;
Query Match 94.24; Score 732; DB 12; Length 145;
Best Local Similarity 93.74; Pred. No. 4.9e-59;
Matches 134; Conservative 0; Mismatches 6; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 60
QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 121
DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 120
QY 122 SKAPPSLPSPSRPQSDT 141
DB 121 SKAPPSLPSPSRPQSDT 140

```

```

PR 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX Table VII; Page 66; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 134-145 deleted. It was prep. using PCR mutagenesis to
CC insert a stop codon into the gene. It may be useful as an agonist
CC for induction of chorionic gonadotropin releasing hormone therapy.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 133 AA;
Query Match 94.14; Score 731; DB 12; Length 133;
Best Local Similarity 100.04; Pred. No. 5.6e-59;
Matches 133; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 60
QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 121
DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 120
QY 122 SKAPPSLPSPSR 134
DB 121 SKAPPSLPSPSR 133
RESULT 112
AAR15121
ID AAR15121 standard; Protein: 145 AA.
XX AC AAR15121;
XX 11-FEB-1992 (first entry)
XX hCG/hLH chimera, A6.
XX Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW luteinizing hormone; LH; CG.
XX Homo sapiens.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX Table VII; Page 66; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 134-145 deleted. It was prep. using PCR mutagenesis to
CC insert a stop codon into the gene. It may be useful as an agonist
CC for induction of chorionic gonadotropin releasing hormone therapy.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 133 AA;
Query Match 94.14; Score 731; DB 12; Length 133;
Best Local Similarity 100.04; Pred. No. 5.6e-59;
Matches 133; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKGGCPVCITVNTTICAGYCPMTTRVQLQVLPALPOVVCNTR 60
QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 121
DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHLPLTCDPRFQDSSS 120
QY 122 SKAPPSLPSPSR 134
DB 121 SKAPPSLPSPSR 133

```

Table VI; Page 65; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 2, 8, 10, 15, 42, 47 and 51 replaced by the corresponding
 CC residues in the human LH protein. The chimeric hormone may be
 CC used in the treatment of infertility in men and women and the
 CC promotion of fertility in female animals.
 CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.

XX Sequence 145 AA:

Query Match 94.1%; Score 731; DB 12; Length 145;
 Best Local Similarity 95.0%; Pred. No. 6.1e-59;
 Matches 133; Conservative 1; Mismatches 6; Indels 0; Gaps 0;
 QY 2 SKPELRPCRPINATLAVKKEGCPVCTVNTTCAGYCPNTRVLQGVLPALPQVNCNR 61
 DB 1 SREPLRPNCPIINALAVKKEGCPVCTVNTTCAGYCPNTRVLQGVLPALPQVNCNR 60
 QY 62 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPHTCDDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPHTCDDPRFQDSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 113

AARI5099
 ID AARI5099 standard; Protein: 145 AA.

XX AARI5099;

DT 11-FEB-1992 (first entry)

XX hCG/bLH chimera, D3.

XX Glycoprotein hormone; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG; bovine.

OS Homo sapiens.

OS Bos taurus.

XX W09116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UTNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as
 CC immuno-castration agents, for suppressing reproductive system
 CC development and as immuno-contragestive vaccines.

PS Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 40, 42, 46-48, 51, 52, and 55 replaced by the corresponding
 CC residues in the bovine LH protein. The chimeric hormone may be
 CC useful for identifying residues which are important for binding to
 CC the human receptor and may also have applications as an immunogen,
 CC agonist and/or antagonist.
 CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.

XX

SO Sequence 145 AA:

Query Match 94.0%; Score 730; DB 12; Length 145;
 Best Local Similarity 94.3%; Pred. No. 7.5e-59;
 Matches 132; Conservative 3; Mismatches 5; Indels 0; Gaps 0;
 QY 2 SKPELRPCRPINATLAVKKEGCPVCTVNTTCAGYCPNTRVLQGVLPALPQVNCNR 61
 DB 1 SKEPLRPCRPINATLAVKKEGCPVCTVNTTCAGYCPNTRVLQGVLPALPQVNCNR 60
 QY 62 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPHTCDDPRFQDSSS 121
 DB 61 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPHTCDDPRFQDSSS 120
 QY 122 SKAPPPSLPSRLPGPSDT 141
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 114

AAM27680
 ID AAM27680 standard; Protein: 145 AA.

XX AAM27680;

DT 12-JAN-1998 (first entry)

XX Chorionic gonadotropin beta subunit amino-terminal loop mutant.
 XX Human; chorionic gonadotropin; chorionic gonadotropin; beta-hCG;
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
 KW contragestative medicament; cross-reactivity; luteinising hormone;
 KW contraceptive; immunoassay; Kaposi sarcoma; inhibition;
 KW neutralising antibody.

OS Homo sapiens.

OS Synthetic.

XX Key Location/Qualifiers

ET Misc-difference 20 /note= "wild type Lys replaced with Asn"

ET Misc-difference 21 /note= "wild type Glu replaced with Arg"

ET Misc-difference 22 /note= "wild type Gly replaced with Glu"

ET Misc-difference 24 /note= "wild type Pro replaced with His"

ET Misc-difference 25 /note= "wild type Val replaced with Tyr"

XX W09704098-A2.

XX 06-FEB-1997.

XX 19-JUL-1996; 96WO-GB01717.

XX 19-JUL-1995; 95GB-0014816.

XX (DELV/) DELVES P J.

XX (ROIT/) ROITT I M.

XX Delves PJ, Lund T, Roitt IM;

XX WPI; 1997-132639/12.

XX Modified beta-human chorionic gonadotropin proteins - useful as
 CC contragestative vaccine

XX Example; Page 2; 23pp; English.

XX The present sequence is the human chorionic gonadotropin beta
 CC subunit (beta-hCG), amino-terminal loop mutant Lys20Asn, Glu21Arg,
 CC Gly22Glu, Val25Tyr, which can be used in the preparation

	Query Match	93.74;	Score 728;	DB 12;	Length 137;
	West Local Similarity	100.00;	Pred. NO. 11e-56;		
	Matches 132;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps
QY	9	RCRPNMATLAVEKGGPCVCTIVTTICAGCTPTFTEVLGQLPALPOVYCNTRDVRFSI	68		
Db	1	RCRPNMATLAVEKGGPCVCTIVTTICAGCTPTFTEVLGQLPALPOVYCNTRDVRFSI	60		
QY	69	RLFGCRGHWHPVSTAVIALSCQALGCRSTTDCGGKHPLFCDPDPDQSSSSKAPPPS	120		
Db	61	RLFGCRGHWHPVSTAVIALSCQALGCRSTTDCGGKHPLFCDPDPDQSSSSKAPPPS	120		

Qy	129	LPSPRLPGPSD	140
Db	121	LPSPRLPGPSD	132
		RESULT 116	
		AAR15111	
		ID AAR15111 standard; Protein: 145 AA.	
		xx	
		xx AAR15111;	
		xx	
		xx	
		xx 11-FEB-1992 (first entry)	
		xx	
		xx hCG/eLH chimera, E3.	
		xx	
		xx Glycoprotein hormone; Immuno-castration;	
KW		Immuno-contragestive; vaccine; human chorionic gonadotropin;	
EW			

XX	Homo sapiens.
OS	Equus caballus.
PA	W09116922-A.
PX	
PD	14-NOV-1991.
XX	
PF	07-MAY-1991: 91WO-US03162.
XX	
PR	08-MAY-1990: 90US-0520703.
XX	
PA	(UYNE-) UNIV MED NEW JERSEY.
XX	Campbell RK, Moyle WR;
XX	
XX	WPI, 1991-351528/48.
DR	
XX	New glyco-protein hormone analogues - for inducing fertility as
PT	immuno-castration agents, for suppressing reproductive system
PT	development and as immuno-contraceptive vaccines.
XX	
Table V:	Page 64; 9app; English.
XX	
XX	The sequence is an analogue of mature hCG beta subunit having
CC	residues 10-55, 110 and 112 replaced by the corresponding
CC	residues from the same protein source. The substitution may be
CC	useful for identifying residues which are important for binding to
CC	the human receptor and may also have applications as an immunogen,
CC	agonist and/or antagonist.
CC	See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX	
SQ	Sequence 145 AA:
XX	
Query Match	93.7%; Score 728; DB 12; Length 145;
Best Local Similarity	96.4%; Pred. No. 1.le-58;
Matches 135;	Conservative 0; Mismatches 5; Indels 0; Gaps
QY	2 KEPLRPRCPRIATLAVENKGGPCVCVTNTTCAGYCPTMTVRVLQGVLPALPQVNCNR 61
	1 SKEPLRPRCPRIATLAVENKGGPCVCVTNTTCAGYCPTMTVRVLQGVLPALPQVNCNR 60
DB	

Qy 62 DVFESIRLPGCPRGVNPVSYAVALSCQCALCRSTTDCGGPKDHLPLTCDDPRFQDSSS 121

```
Db 61 DYRFESIRLPCRGVNPVYVAVALSCQCALCRSTTDCGVRHQUTADOPRQDSSS 120
QY 122 SKAPPSLPSPRLPGSDT 141
Db 121 SKAPPSLPSPRLPGSDT 140

RESULT 117
AA43266
ID AAY43266 standard; Protein; 158 AA.
XX
AC AAY43266;
XX
DT 19-JAN-2000 (first entry)
XX
ID Human chorionic gonadotrophin beta subunit mutant.
XX
KW Cysteine knot protein; protein formation; heterodimeric protein analog;
KW deglycosylated glycoprotein hormone; Infertility; Immunogen; antigen;
KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin; mutein;
XX Beta subunit; therapy.
XX
OS Homo sapiens.
XX Synthetic.
XX
XX W09953065-A1.
XX
PD 21-OCT-1999.
XX
XX 13-APR-1999; 99NO-US08018.
XX
XX 14-APR-1998; 98US-0059625.
XX
XX (UYNE-) UNIV NEW JERSEY.
XX
XX Moyle WR;
XX
XX WPI: 1999-620431/53.
XX
XX N-PSDB; AA231734.
XX
XX
PT Methods for producing heterodimers, particularly analogues of hormones,
PT from subunits of cysteine knot proteins.
XX
XX
XX Example 1; Fig 1; 73pp; English.
XX
XX This sequence represents a human chorionic gonadotrophin (hCG) beta
XX subunit mutant. The invention relates to a method of forming a cysteine
XX knot protein (1) having alpha and beta-subunits comprising attaching a
XX heterodimeric chain (DD) to either the N-termini of both subunits or the
XX N-termini of the alpha subunit and C-termini of the beta subunit
XX and dimerising the products to form heterodimeric proteins (1).
XX The method is used to produce analogues (agonists or antagonists) of
XX deglycosylated glycoprotein hormones, potentially useful, e.g. for
XX treating infertility where caused by polycystic ovarian disease
XX (associated with excessive levels of luteinising hormone). Products that
XX retain DD's are also useful as immunogens or antigens (since a DD may
XX containing highly antigenic amino acid sequences). Attachment of a DD
XX (which may be removed later) facilitates the formation of heterodimers,
XX that have similar structures (and thus receptor-binding and immunogenic
XX properties) to native dimers, and allows the combination of subunits that
XX glycoprotein hormone was poorly formed, the longer the time of
XX attachment of the DD reduces formation of homodimers. Heterodimers have
XX longer circulation times in vivo than individual subunits.
XX
XX Sequence 158 AA;
XX
XX Query Match 93.7%; Score 728; DB 20; Length 158;
XX Best Local Similarity 100.0%; Pred. No. 1.2e-58;
XX Matches 132; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX 10 CRPINATLAVEKCCPVCTVNTTICAGTCPTMTRVLGQVLPALPOVYCNVDRVFESIR 69
```

```
Db 22 CRPINATLAVEKCCPVCTVNTTICAGTCPTMTRVLGQVLPALPOVYCNVDRVFESIR 81
QY 70 LPQCPRGVNPVYVAVALSCQCALCRSTTDCGVRHQUTADOPRQDSSSSKAPPSL 129
Db 82 LPQCPRGVNPVYVAVALSCQCALCRSTTDCGVRHQUTADOPRQDSSSSKAPPSL 141
QY 130 PPSRLPGSDT 141
Db 142 PPSRLPGSDT 153

RESULT 118
AAR15167
ID AAR15167 standard; Protein; 139 AA.
XX
AC AAR15167;
XX
DT 11-FEB-1992 (first entry)
XX
DE hCG deletion mutant, F7.
XX
KW Glycoprotein hormone; Immuno-castration;
KW Immuno-contraceptive; vaccine; human chorionic gonadotropin;
XX Homo sapiens.
XX
XX W09116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
XX
XX WPI: 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contraceptive vaccines.
XX
XX Table VII; Page 66; 94pp; English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 94-99 deleted. It was prep. using PCR mutagenesis to
XX insert a stop codon into the gene. It may be useful as an agonist
XX for subunit of hCG in treating cancer therapy.
XX See AAR15041, AAR15061-R15125 and AAR15191-R15198.
XX
XX Sequence 139 AA;
XX
XX Query Match 93.6%; Score 727; DB 12; Length 139;
XX Best Local Similarity 95.7%; Pred. No. 1.3e-58;
XX Matches 134; Conservative 0; Mismatches 0; Indels 6; Gaps 1;
XX
XX 2 SKEPLPRCPINATLAVEKCCPVCTVNTTICAGTCPTMTRVLGQVLPALPOVYCNV 61
Db 1 SKEPLPRCPINATLAVEKCCPVCTVNTTICAGTCPTMTRVLGQVLPALPOVYCNV 60
QY 62 DYRFESIRLPCRGVNPVYVAVALSCQCALCRSTTDCGVRHQUTADOPRQDSSS 121
Db 61 DYRFESIRLPCRGVNPVYVAVALSCQCALCRSTTDCGVRHQUTADOPRQDSSS 114
QY 122 SKAPPSLPSPRLPGSDT 141
Db 115 SKAPPSLPSPRLPGSDT 134

RESULT 119
```

AAR15104
 ID AAR15104 standard; Protein; 145 AA.
 AC AAR15104;

DT 11-FEB-1992 (first entry)
 XX hCG/BLH chimera, D8.

XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG; bovine.

OS Homo sapiens.
 OS Bos taurus.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

XX Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 105-107, 110 and 113 replaced by the corresponding
 CC residues in the bovine LH protein. The chimeric hormone may be
 CC useful for identifying residues which are important for binding to
 CC the human receptor and may also have applications as an immunogen,
 CC agonist and/or antagonist.

XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA;

Query Match 91.43; Score 726; DB 12; Length 145;
 Best Local Similarity 96.43; Pred. No. 1,7e-58;
 Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNVR 61

DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNVR 60

QY 62 DVFESIRLPCGPRGPNVWVYVALSCCALCRSTTDCGGPKDHLPTCDPRFOSSS 121

DB 61 DVFESIRLPCGPRGPNVWVYVALSCCALCRSTTDCGGPKDHLPTCDPRFOSSS 120

QY 122 SKAPPSLPSPRLPGPSDT 141

DB 121 SKAPPSLPSPRLPGPSDT 140

XX RESULT 120

XX AAR15074

XX ID AAR15074 standard; Protein; 145 AA.

XX AC AAR15074;

XX 11-FEB-1992 (first entry)

XX hCG/hFSH chimera, B14.

XX

KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;

OS Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 39, 41-43, 55, 56, and 58 replaced by the corresponding
 CC residues in the hFSH protein. It was prepd. by site directed
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit. The
 CC chimeric hormone is capable of directing hormone binding to both LH
 CC and FSH receptors and may be useful for the treatment of infertility
 CC in men and women and the promotion of fertility in male
 CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).

XX Sequence 145 AA;

Query Match 93.34; Score 725; DB 12; Length 145;
 Best Local Similarity 95.04; Pred. No. 2.1e-58;
 Matches 133; Conservative 0; Mismatches 7; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNVR 61

DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNVR 60

QY 62 DVFESIRLPCGPRGPNVWVYVALSCCALCRSTTDCGGPKDHLPTCDPRFOSSS 121

DB 61 DVFESIRLPCGPRGPNVWVYVALSCCALCRSTTDCGGPKDHLPTCDPRFOSSS 120

QY 122 SKAPPSLPSPRLPGPSDT 141

DB 121 SKAPPSLPSPRLPGPSDT 140

XX RESULT 121

XX AAR15064

XX ID AAR15064 standard; Protein; 145 AA.

XX AC AAR15064;

XX 11-FEB-1992 (first entry)

XX hCG/hFSH chimera, B4.

XX Glycoprotein hormone; fertility; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;

KW follicle stimulating hormone; FSH; CG;

OS Homo sapiens.

XX WO9116922-A.

XX

PD 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR.
 XX WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table II; Page 61; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 45-53 replaced by the corresponding residues of a hCG
 CC protein. It was prep'd. by site directed mutagenesis of a cDNA
 CC sequence encoding the hCG beta subunit. The chimeric hormone is
 CC capable of directing hormone binding to both LH and FSH receptors
 CC and may be useful for the treatment of infertility in men and women
 CC and the promotion of fertility in male and female animals. (See
 CC AAR15043, AAR15061-R15125 and AAR15161-R15198).
 XX
 XX Sequence 145 AA:
 SQ
 Query Match 92.4%; Score 718; DB 12; Length 145;
 Best Local Similarity 94.4%; Pred. No. 9.2e-58;
 Matches 134; Conservative 1; Mismatches 3; Indels 4; Gaps 2;
 OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCTPTMTVLQGLPALP--QVNCN 59
 DB 1 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCTPTMTVRYND--PARPQVNCN 58
 OY 60 YDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTDCGGPKDHPDTCDFRQDS 119
 DB 59 YDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTDCGGPKDHPDTCDFRQDS 118
 OY 120 SSSKAPPSLPSPRLPGSDT 141
 DB 119 SSSKAPPSLPSPRLPGSDT 140
 RESULT 122
 AAR15122 standard; Protein; 145 AA.
 XX
 XX AAR15122;
 XX
 XX 11-FEB-1992 (first entry)
 XX hCG/hLH chimera, A7.
 XX
 XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinizing hormone; LH; CG.
 XX Homo sapiens.
 XX
 XX W09116922-A.
 XX
 XX 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR.
 XX WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table II; Page 61; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 73-81, and 83 replaced by the corresponding

XX WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table VI; Page 65; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 17-27, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 20

CC residues in the hTSH protein. It was prep'd. by site directed mutagenesis of a cDNA sequence encoding the hCG beta subunit. The chimeric hormone is capable of directing hormone binding to hTSH receptors and may be useful for the treatment of infertility in men and female animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).

XX SQ Sequence 145 AA;
 Query Match 92.1%; Score 716; DB 12; Length 145;
 Best Local Similarity 92.1%; Pred. No. 1.4e-57;
 Matches 130; Conservative 3; Mismatches 7; Indels 0; Gaps 0;
 QY 2 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 61
 DB 1 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 60
 QY 62 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 121
 DB 61 DVFESIRLPGCAHADSPLYTPVALSQACLRSTTDCGPKDHPHPLTCDPRFQSSS 120
 QY 122 SKAPPSLPSPSRPGSDT 141
 DB 121 SKAPPSLPSPSRPGSDT 140

RESULT 124
 AAR15093
 ID AAR15093 standard; Protein; 144 AA.
 XX AC AAR15093;
 XX DT 11-FEB-1992 (first entry)
 XX DE hCG/hTSH chimera, C6.
 XX KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW thyroid stimulating hormone; TSH; CG;
 XX OS Homo sapiens.
 XX PN W09116922-A.
 XX PD 14-NOV-1991.
 XX PF 07-MAY-1991; 91WO-US03162.
 XX PR 08-MAY-1990; 90US-0520703.
 XX PA (UYNE-) UNIV MED NEW JERSEY.
 XX PI Campbell RK, Moyle WR;
 XX DR WPI; 1991-353528/48.
 XX PT New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX PS Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 89, 91, 92, and 95-99 replaced by the corresponding
 CC residues in the hTSH protein and residue 94 deleted. The
 CC chimeric hormone may be useful as a TSH antagonist for the
 CC treatment of hyperthyroidism.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX SQ Sequence 144 AA;
 Query Match 92.0%; Score 714.5; DB 12; Length 144;

XX Best Local Similarity 92.1%; Pred. No. 2.6e-57;
 Matches 129; Conservative 4; Mismatches 7; Indels 0; Gaps 0;
 QY 2 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 61
 DB 1 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 60
 QY 62 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 121
 DB 61 DVFESIRLPGCAHADSPLYTPVALSQACLRSTTDCGPKDHPHPLTCDPRFQSSS 120

Best Local Similarity 93.7%; Pred. No. 1.9e-57;
 Matches 133; Conservative 1; Mismatches 3; Indels 5; Gaps 2;
 QY 2 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 61
 DB 1 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 60
 QY 62 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 119
 DB 61 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 117
 QY 120 SSKAPPSLPSPSRPGSDT 141
 DB 118 SSKAPPSLPSPSRPGSDT 139

RESULT 125
 AAR15124
 ID AAR15124 standard; Protein; 145 AA.
 XX AC AAR15124;
 XX DT 11-FEB-1992 (first entry)
 XX DE hCG/hLH chimera, A9.
 XX KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinizing hormone; LH; CG;
 XX OS Homo sapiens.
 XX PN W09116922-A.
 XX PD 14-NOV-1991.
 XX PF 07-MAY-1991; 91WO-US03162.
 XX PR 08-MAY-1990; 90US-0520703.
 XX PA (UYNE-) UNIV MED NEW JERSEY.
 XX PI Campbell RK, Moyle WR;
 XX DR WPI; 1991-353528/48.
 XX PT New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX PS Table VI; Page 65; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 2, 8, 10, 15, 77, 82, 83, 89, 91, 92 and 99 replaced by the
 CC corresponding residues in the human LH protein. The chimeric
 CC hormone may be useful in the treatment of infertility in men and
 CC women and the promotion of fertility in male and female animals.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX SQ Sequence 145 AA;
 Query Match 91.8%; Score 713; DB 12; Length 145;
 Best Local Similarity 92.1%; Pred. No. 2.6e-57;
 Matches 129; Conservative 4; Mismatches 7; Indels 0; Gaps 0;
 QY 2 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 61
 DB 1 SKPELRPCRPINATLAVKEGCPVCITVNTTICAGYCPPTMRVQLGVLPALPOVYCNVR 60
 QY 62 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 121
 DB 61 DVFESIRLPGCPGPNVSVYAVALSQCACLRSTTDCGPKDHPHPLTCDPRFQSSS 120

OY 122 SKAPPSLPSPRLPGSDT 141
 DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 126

AAR15080
 ID AAR15080 standard; Protein: 145 AA.

XX AC AAR15080;

XX DT 11-FEB-1992 (first entry)

XX DE HCG/hFSH chimera, B20.

XX KW Glycoprotein hormone; fertility; immuno-castration;

XX KW immuno-contragative; vaccine; human chorionic gonadotropin;

XX KW follicle stimulating hormone; FSH; CG;

XX OS Homo sapiens.

XX PN W09116922-A.

XX PD 14-NOV-1991.

XX PE 07-MAY-1991; 91WO-US03162.

XX PR 08-MAY-1990; 90US-0520703.

XX PA (UYNE-) UNIV MED NEW JERSEY.

XX PI Campbell RK, Moyle WR;

XX DR WPI; 1991-353528/48.

XX PT New glyco-protein hormone analogues - for inducing fertility as

XX PS immuno-castration agents, for suppressing reproductive system

XX PS development and as immuno-contragative vaccines.

XX PS Table II; Page 61; 94pp; English.

XX CC The sequence is an analogue of mature hCG beta subunit having

XX CC residues 102-107, 109 and 110 replaced by the corresponding residues

XX CC in the hFSH protein. The chimeric hormone is capable of

XX CC directing hormone binding to both LH and FSH receptors and may be

XX CC useful for the treatment of infertility in men and women and the

XX CC promotion of fertility in male and female animals. (See AAR15043,

XX CC AAR15061-R15125 and AAR15161-R15198).

XX SQ Sequence 145 AA;

XX Query Match 91.1%; Score 708; DB 12; Length 145;

XX Best Local Similarity 94.3%; Pred. No. 7, 4e-57;

XX Matches 132; Conservative 2; Mismatches 6; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVLQGLPALPQVVCNTR 61

DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVLQGLPALPQVVCNTR 60

OY 62 DVFESIRLPCRCRGVNPVYVAVALSCCALCRSTTDCGPKDPLTCDDPRQDSSS 121

DB 61 DVFESIRLPCRCRGVNPVYVAVALSCCALCRSTTDCGPKDPLTCDDPRQDSSS 120

OY 122 SKAPPSLPSPRLPGSDT 141

DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 127

AAY43300

ID AAY43300 standard; Protein: 209 AA.

XX AC AAY43300;

XX DT 19-JAN-2000 (first entry)

XX DE HLA/HCG beta subunit-Jun fusion protein sequence.

XX KW Cysteine knot protein; protein formation; heterodimeric protein analog;

XX KW cysteine knot protein; protein formation; heterodimeric protein analog;

XX KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;

XX KW beta subunit; therapy; Jun.

XX OS Homo sapiens.

XX QS Synthetic.

XX PN W09933065-A1.

XX PD 21-OCT-1999.

XX PE 13-APR-1999; 99WO-US08018.

XX PR 14-APR-1998; 98US-0059625.

XX PA (UYNE-) UNIV NEW JERSEY.

XX PI Moyle WR;

XX DR WPI; 1999-620431/53.

XX PT Methods for producing heterodimers, particularly analogues of hormones,

XX PS from subunits of cysteine knot proteins -

XX PS Example 7; Fig 20; 73pp; English.

XX CC This sequence is a fusion protein of HLA/HCG and Jun. The invention

XX CC relates to a method of forming a cysteine knot protein (1) having alpha

XX CC and beta-subunits comprising attaching a dimerisation domain (DD) to

XX CC either the N-termini of both subunits or the C-termini of the

XX CC alpha-subunit and to the C-termini of the beta-subunit and the

XX CC method is used to produce analogues (agonists or antagonists) of

XX CC glycoprotein hormones, potentially useful, e.g. for treating infertility

XX CC where caused by polycystic ovarian disease (associated with excessive

XX CC levels of luteinising hormone). Products that retain DD's are also useful

XX CC as immunogens or antigens (since a DD may contain highly antigenic

XX CC amino acid sequences). Attachment of a DD (which may be removed later)

XX CC facilitates the formation of heterodimers, that have similar structures

XX CC (and thus receptor-binding and immunogenic properties) to native dimers,

XX CC and allows the combination of subunits that would otherwise combine

XX CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may

XX CC be modified without loss of activity, and attachment of the DD reduces

XX CC formation of non-functional heterodimers.

XX CC vivo than individual subunits.

XX SQ Sequence 209 AA;

XX Query Match 90.5%; Score 703; DB 20; Length 209;

XX Best Local Similarity 90.7%; Pred. No. 3, 1e-56;

XX Matches 127; Conservative 5; Mismatches 8; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVLQGLPALPQVVCNTR 61

DB 21 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVLQGLPALPQVVCNTR 80

OY 62 DVFESIRLPCRCRGVNPVYVAVALSCCALCRSTTDCGPKDPLTCDDPRQDSSS 121

DB 81 DVFESIRLPCRCRGVNPVYVAVALSCCALCRSTTDCGPKDPLTCDDPRQDSSS 140

OY 122 SKAPPSLPSPRLPGSDT 141

DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 128

AAR15061

ID AAR15061 standard; Protein: 139 AA.
 XX AAR15061;
 AC
 DT 11-FEB-1992 (first entry)
 DE hCG/hTSH chimera, B1.
 XX
 DE
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 OS Homo sapiens.
 XX
 XX W09116922-A.
 XX 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX
 XX Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table II; Page 61; 94pp; English.
 XX
 XX The sequence is an analogue comprising amino acids 7-145 of mature
 CC hCG beta subunit having residues 7, 8, 10, 11, 12, 14, 16, and 18
 CC replaced by the corresponding residues in the hTSH protein. It was
 CC prepared by site directed mutagenesis of a cDNA sequence encoding the
 CC hCG beta subunit. The chimera is capable of directing the binding of
 CC hormone binding to both LH and FSH receptors and is useful for
 CC the treatment of infertility in men and women and the promotion of
 CC fertility in male and female animals. (See AAR15043, AAR15062-R15125
 CC and AAR15161-R15198).
 XX
 XX Sequence 139 AA:
 SQ
 Query Match 90.1%; Score 700; DB 12; Length 139;
 Best Local Similarity 95.5%; Pred. No. 3.8e-56;
 Matches 146; Conservative 2; Mismatches 4; Indels 0; Gaps 0;
 Oy 10 CRPINATLAVKESGCPVCTVNTTICAGYCPMTVRLQGLPALPQVYCVNRYDVRFSR 69
 Db 3 CELTNITIAERKESGCPVCTVNTTICAGYCPMTVRLQGLPALPQVYCVNRYDVRFSR 62
 Oy 70 LPQCPRGVNVYSVALSCQALCRSTTDCGPKDHLTCDDPRFQDSSSKAPPSL 129
 Db 63 LPQCPRGVNVYSVALSCQALCRSTTDCGPKDHLTCDDPRFQDSSSKAPPSL 122
 Oy 130 PPSRLPQPSDT 141
 Db 123 PPSRLPQPSDT 134
 RESULT 129
 AAR15094
 ID AAR15094 standard; Protein: 145 AA.
 XX
 AC AAR15094;
 XX
 DT 11-FEB-1992 (first entry)
 DE hCG/hTSH chimera, C7.
 XX
 XX

KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW thyroid stimulating hormone; TSH; CG;
 OS Homo sapiens.
 XX
 XX W09116922-A.
 XX 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX
 XX Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table III; Page 62; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 102-110 replaced by the corresponding residues in the hTSH
 CC protein. It was prepared by site directed mutagenesis of a cDNA
 CC sequence encoding the hCG beta subunit. It is useful as a TSH antagonist
 CC for the treatment of hyperthyroidism.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA:
 SQ
 Query Match 90.0%; Score 699; DB 12; Length 145;
 Best Local Similarity 93.6%; Pred. No. 4.9e-56;
 Matches 131; Conservative 1; Mismatches 8; Indels 0; Gaps 0;
 Oy 2 SKEPRLRCPRIATLAVKESGCPVCTVNTTICAGYCPMTVRLQGLPALPQVYCVNRY 61
 Db 1 SKEPRLRCPRIATLAVKESGCPVCTVNTTICAGYCPMTVRLQGLPALPQVYCVNRY 60
 Oy 62 DYRFESIRLPGCPRGVNVYSVALSCQALCRSTTDCGPKDHLTCDDPRFQDSSS 121
 Db 61 DYRFESIRLPGCPRGVNVYSVALSCQALCRSTTDCGPKDHLTCDDPRFQDSSS 120
 Oy 122 SKAPPSPSPSRPQPSDT 141
 Db 121 SKAPPSPSPSRPQPSDT 140
 RESULT 130
 AAR15088
 ID AAR15088 standard; Protein: 138 AA.
 XX
 AC AAR15088;
 XX
 DT 11-FEB-1992 (first entry)
 DE hCG/hTSH chimera, C1.
 XX
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW thyroid stimulating hormone; TSH; CG;
 OS Homo sapiens.
 XX
 XX W09116922-A.
 XX 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX

PR 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX
 XX Table III; Page 62; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 1-7 deleted and residues 8, 10, 12-14 and 16-18 replaced by
 CC the corresponding residues in the hFSH protein. The chimeric hormone
 CC may be useful for identifying residues which are important
 CC for binding to the human receptor and may also have applications as
 CC agonists, antagonists, and antagomists.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 138 AA;
 SQ

Query Match 89.3%; Score 694; DB 12; Length 138;
 Best Local Similarity 94.7%; Pred. No. 1.3e-55;
 Matches 125; Conservative 2; Mismatches 5; Indels 0; Gaps 0;

QY 10 CRPINALAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYRDFESIR 69
 DB 1 CIPETVTHIEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYRDFESIR 61
 QY 70 LFGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSSSKAPPSL 129
 DB 62 LFGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSSSKAPPSL 121
 QY 130 FSPSLPGPSDT 141
 DB 122 FSPSLPGPSDT 133

RESULT 131
 AAR15113
 ID AAR15113 standard; Protein; 145 AA.
 XX
 AC AAR15113;
 XX
 DT 11-FEB-1992 (first entry)
 XX
 DE hCG/eLH chimera, E5.
 XX
 XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG; equine; horse.
 XX
 XX Homo sapiens.
 OS Equus caballus.
 XX
 PN WO9116922-A.
 XX
 PD 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

XX Table V; Page 64; 94pp; English.
 XX
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 94-96, 103-105, 107, 110 and 112-115 replaced by the
 CC corresponding residues in the equine LH protein. The chimeric
 CC hormone may be useful for identifying residues which are important
 CC for binding to the human receptor and may also have applications as
 CC agonists, antagonists, and antagomists.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX
 XX Sequence 145 AA;
 SQ

Query Match 89.3%; Score 694; DB 12; Length 145;
 Best Local Similarity 92.1%; Pred. No. 1.4e-55;
 Matches 129; Conservative 2; Mismatches 9; Indels 0; Gaps 0;

QY 2 SKEPLRRCRFINATLAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYR 61
 DB 1 SKEPLRRCRFINATLAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYR 60
 QY 62 DYRFESTRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSS 121
 DB 61 DYRFESTRLPGCPGVNVPVSYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSS 120
 QY 122 SKAPPSLPSPSLPGPSDT 141
 DB 121 SKAPPSLPSPSLPGPSDT 140

RESULT 132
 AAR15084
 ID AAR15084 standard; Protein; 145 AA.
 XX
 AC AAR15084;
 XX
 DT 11-FEB-1992 (first entry)
 XX
 DE hCG/hFSH chimera, B24.
 XX
 XX Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG.
 XX
 OS Homo sapiens.
 XX
 PN WO9116922-A.
 XX
 PD 14-NOV-1991.
 XX
 XX 07-MAY-1991; 91WO-US03162.
 XX
 XX 08-MAY-1990; 90US-0520703.
 XX
 XX (UYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI; 1991-353528/48.
 XX
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 39, 41-43, and 45-53 replaced by the corresponding residues
 CC in the hFSH protein. The chimeric hormone is capable of directing
 CC hormone binding to both LH and FSH receptors and may be useful for
 CC treatment of infertility in men and women and the promotion of
 CC fertility in male and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).

Db 1 SKEPLRPRCPINATLAVEKGPVCITVNTTICAGYC--MTRDINGKLFLPKYALSQDV 58
 QY 58 CNYRDFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQ 117
 Db 59 CNYRDFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQ 118
 QY 118 DSSSSKAPPPSLPSPRLPGSDT 141
 Db 119 DSSSSKAPPPSLPSPRLPGSDT 142
 RESULT 135
 AARI5163
 ID AARI5163 standard; Protein: 123 AA.
 AC AARI5163;
 XX 11-FEB-1992 (first entry)
 DT 11-FEB-1992 (first entry)
 DE hCG deletion mutant, F3.
 XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 XX Homo sapiens.
 OS W09116922-A.
 PN 14-NOV-1991.
 PD 14-NOV-1991.
 XX 07-MAY-1991: 91WO-US03162.
 XX 08-MAY-1990: 90US-0520703.
 XX (DYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI: 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table VII: Page 66; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 124-145 deleted. It was prepd. using PCR mutagenesis to
 XX insert a stop codon into the gene. It may be useful as an agonist
 XX for suppression of gonadal activity during chemotherapy.
 XX See AARI5043, AARI5061-R15125 and AARI5161-R15198.
 XX Sequence 123 AA:
 SQ Query Match 86.9%; Score 675; DB 12; Length 123;
 Best Local Similarity 100.0%; Pred. NO. 6.2e-54;
 Matches 123; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKGPVCITVNTTICAGYCPTMTRVLCGLPALPQVVCNTR 61
 Db 1 SKEPLRPRCPINATLAVEKGPVCITVNTTICAGYCPTMTRVLCGLPALPQVVCNTR 60
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQSSS 121
 Db 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQSSS 120
 QY 122 SKA 124
 Db 121 SKA 123
 RESULT 136
 AAW99535

ID AAW99535 standard; Protein: 165 AA.
 AC AAW99535;
 XX 08-JUN-1999 (first entry)
 DE hCG/hFSH chimeric beta subunit CFC101-114-beta'.
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLR; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer: amplification; PCR; mutation.
 OS Homo sapiens.
 OS Synthetic.
 PN W09858957-A2.
 PD 30-DEC-1998.
 XX 25-JUN-1998: 98WO-US13070.
 XX 25-JUN-1997: 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 PA (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI: 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLR, hFSH
 XX or hTSH, have an intersubunit disulphide crosslink between the
 XX alpha- and beta-subunits to improve stability
 XX Disclosure: Fig 10A; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 XX (hCG), human chorionic gonadotropin (hLR), human chorionic gonadotropin
 XX (hFSH), human thyroid stimulating hormone (hTSH), and functional
 XX mutants, which are modified to contain an intersubunit disulphide bond,
 XX between an alpha-subunit cysteine and a beta-subunit cysteine, for
 XX improved stability, the analogue retaining at least a portion of the
 XX bioactivity for the corresponding native GPH receptor. This sequence
 XX represents a chimeric hCG/hFSH-beta subunit used for the generation of
 XX the modified GPHs. The improved analogues are designed specifically
 XX to reduce perturbation of the 3-dimensional structure of the hormone,
 XX thereby creating greater likelihood that the dimer will be formed in vivo
 XX and the formed dimer will have affinity for the native receptors and have
 XX agonistic activity on them. The changes stabilise the analogues and
 XX as for the native GPHs. The analogues can have uses
 XX SQ Sequence 165 AA:
 Query Match 86.9%; Score 675; DB 20; Length 165;
 Best Local Similarity 91.4%; Pred. No. 8.4e-54;
 Matches 128; Conservative 0; Mismatches 12; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKGPVCITVNTTICAGYCPTMTRVLCGLPALPQVVCNTR 61
 Db 21 SKEPLRPRCPINATLAVEKGPVCITVNTTICAGYCPTMTRVLCGLPALPQVVCNTR 80
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQSSS 121
 Db 81 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGGKDHPLTCDPRFQSSS 140
 QY 122 SKAPPPSLPSPRLPGSDT 141
 Db 141 SKAPPPSLPSPRLPGSDT 160

RESULT 137
 AAR15075 standard; Protein: 145 AA.
 AC AAR15075;
 DT 11-FEB-1992 (first entry)
 XX hCG/hFSH chimera, B15.
 XX Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91MO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UTNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 Table II; Page 61; 94pp; English.
 CC The sequence is an analogue of mature hCG beta subunit having
 CC residues 39, 41-43, 45-53, 55, 56, and 58 replaced by the corresponding
 CC residues in the hFSH protein. It was prep. by site directed
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit. The
 CC chimeric hormone is capable of directing hormone binding to both LH
 CC and FSH receptors and may be useful for the treatment of infertility
 CC in men and women and the promotion of fertility in male
 CC and female animals. (See AAR15043, AAR15061-R15125 and
 CC AAR15161-R15198).
 XX Sequence 145 AA;
 SQ
 Query Match 86.7%; Score 674; DB 12; Length 145;
 Best Local Similarity 88.7%; Pred. No. 9e-54;
 Matches 126; Conservative 3; Mismatches 9; Indels 4; Gaps 2;
 QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTTCAGYCTPTTRVQLGVLPALPOV--VCN 59
 Db 1 SKEPLRRCRPNATLAVKEGCPVCITVTTCAGYCTPTTRVQLGVLPALPOV--VCN 59
 QY 60 YRDVFESIRLPGCPGPNVPSYAVALSQCACRCRSTTDCGGPKDHLPTCDPRFQDS 119
 Db 59 YRDVFESIRLPGCPGPNVPSYAVALSQCACRCRSTTDCGGPKDHLPTCDPRFQDS 118
 QY 120 SSSKAPPSLPSPRLPGPSDT 141
 Db 119 SSSKAPPSLPSPRLPGPSDT 140
 RESULT 138
 AAW99539 standard; Protein: 165 AA.
 XX AAW99539;
 XX 08-JUN-1999 (first entry)
 XX

DE hCG/hFSH chimeric beta subunit CFC101-114-beta/p99C.
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
 KW follicle stimulating hormone; human chorionic gonadotropin; hCG; hLH;
 KW stability; primer; amplification; PCR; mutation.
 OS Homo sapiens.
 OS Synthetic.
 XX W09859857-A2.
 XX 30-DEC-1998.
 XX 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 XX (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 PT or hTSH have a heterodimeric disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 XX Disclosure; Fig 21; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 CC (hCG), human luteinizing hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC proteins, which are modified to contain a heterodimeric disulphide bond.
 CC Improved stability of the analogue retaining at least a portion of the
 CC bioactivity for the corresponding native GPH receptor. This sequence
 CC represents a mutant chimeric hCG/hFSH-beta subunit used for generating
 CC the modified GPHs. The improved analogues are designed specifically
 CC to reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX Sequence 165 AA;
 SQ
 Query Match 86.4%; Score 671; DB 20; Length 165;
 Best Local Similarity 90.7%; Pred. No. 1.9e-53;
 Matches 127; Conservative 1; Mismatches 12; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTTCAGYCTPTTRVQLGVLPALPOVVCNTR 61
 Db 21 SKEPLRRCRPNATLAVKEGCPVCITVTTCAGYCTPTTRVQLGVLPALPOVVCNTR 80
 QY 62 YRDVFESIRLPGCPGPNVPSYAVALSQCACRCRSTTDCGGPKDHLPTCDPRFQDS 121
 Db 81 YRDVFESIRLPGCPGPNVPSYAVALSQCACRCRSTTDCGGPKDHLPTCDPRFQDS 140
 QY 122 SKAPPSLPSPRLPGPSDT 141
 Db 141 SKAPPSLPSPRLPGPSDT 160
 RESULT 139
 AAR15166 standard; Protein: 128 AA.
 XX AAR15166;
 XX AAR15166;
 XX

DT 11-FEB-1992 (first entry)
 DE hCG deletion mutant, F6.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 XX Homo sapiens.
 XX W09116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 YK (UYNE-) UNIV MED NEW JERSEY.
 PA Campbell RK, Moyle WR;
 PI WPI; 1991-353528/48.
 DR New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 YK Table VII; Page 66; 94pp; English.
 CC The sequence is an analogue of mature hCG beta subunit having
 CC residues 39-55 deleted. It was prep. using PCR mutagenesis to
 CC insert a stop codon into the gene. It may be useful as an agonist
 CC for suppression of gonadal activity during chemotherapy.
 CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.
 XX
 SQ Sequence 128 AA;
 Query Match 85.81; Score 666.5; DB 12; Length 128;
 Best Local Similarity 87.91; Pred. No. 3.8e-53;
 Matches 123; Conservative 0; Mismatches 0; Indels 17; Gaps 1;
 QY 2 SKEPLRPRCPINATLAVEREGCPVCITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEREGCPVCITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 43
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 121
 DB 44 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 103
 QY 122 SKAPPPSLPSRLPGSDT 141
 DB 104 SKAPPPSLPSRLPGSDT 123
 RESULT 140
 AAW99536
 ID AAW99536 standard; Protein: 165 AA.
 XX
 YK AAW99536;
 DT 08-JUN-1999 (first entry)
 XX hCG/hFSH chimeric beta subunit CFC101-114-betaY37C.
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hH; hFSH; hTSH;
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
 KW human follicle stimulating hormone; human thyroid stimulating hormone;
 KW stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 OS Synthetic.
 XX W09858957-A2.
 PN

XX 30-DEC-1998.
 PD
 XX 25-JUN-1998; 98WO-US13070.
 PF
 XX 25-JUN-1997; 97US-0050784.
 PR
 XX (ISTF) ABS APPLIED RES SYSTEMS HOLDING NV.
 XX (MCIN-) MCINNIS P.G.
 PA
 PI Moyle WR;
 XX WPI; 1999-081219/07.
 DR New stabilised glycoprotein hormones - particularly hCG, hH, hFSH
 XX or hTSH, have an intersubunit disulphide crosslink between the
 PT alpha- and beta-subunits to improve stability
 YK
 PS Disclosure; Fig 108; 139pp; English.
 CC The invention relates to the production of analogues of a heterodimeric
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
 CC muteins, which are modified to contain an intersubunit disulphide bond,
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for
 CC improved stability, the analogue retaining at least a portion of the
 CC biological activity of the native hormone.
 CC The analogues are produced by the chimeric hCG/hFSH-beta subunit used for generating
 CC the modified GPHs. The improved analogues are designed specifically
 CC to reduce perturbation of the 3-dimensional structure of the hormone,
 CC thereby creating greater likelihood that the dimer will be formed in vivo
 CC and the formed dimer will have affinity for the native receptors and have
 CC agonistic activity on them. The changes stabilise the GPHs and prolong
 CC the biological activities of the hormones. The analogues can have uses
 CC as for the native GPHs.
 XX
 SQ Sequence 165 AA;
 Query Match 85.74; Score 666; DB 20; Length 165;
 Best Local Similarity 90.74; Pred. No. 5.5e-53;
 Matches 127; Conservative 0; Mismatches 13; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEREGCPVCITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61
 DB 21 SKEPLRPRCPINATLAVEREGCPVCITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 80
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 121
 DB 81 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 140
 QY 122 SKAPPPSLPSRLPGSDT 141
 DB 141 SKAPPPSLPSRLPGSDT 160
 RESULT 141
 AARI5072
 ID AARI5072 standard; Protein: 145 AA.
 XX
 YK AARI5072;
 DT 11-FEB-1992 (first entry)
 XX hCG/hFSH chimera, B12.
 DE Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 OS
 XX W09116922-A.
 PN

XX 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (DYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-35328/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table II; Page 61; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 102-107, 109, 110, and 112-118 replaced by the correspond-
 XX ing residues in the hFSH protein. It was prep. by site directed
 XX mutagenesis of a cDNA sequence encoding the hCG beta subunit. The
 XX chimeric hormone is capable of directing hormone binding to both LH
 XX and FSH receptors and may be useful for the treatment of infertility
 XX and female animal's. (See AAR15043, AAR15061-R15123 and
 XX AAR15161-R15198).
 XX Sequence. 145 AA;
 SQ
 Query Match 84.8%; Score 659; DB 12; Length 145;
 Best Local Similarity 89.3%; Pred. No. 2.1e-52;
 Matches 125; Conservative 2; Mismatches 13; Indels 0; Gaps 0;
 Qy 2 SKEPLRRCRPNATLAVKEGCPVCIWNTTICAGCPMTVRVLSGLVLPALPQVWYR 61
 Db 1 SKEPLRRCRPNATLAVKEGCPVCIWNTTICAGCPMTVRVLSGLVLPALPQVWYR 60
 Qy 62 DYRFESIRLPGCGPVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDPRFQDSSS 121
 Db 61 DYRFESIRLPGCGPVNPNVYVAVALSCQALCRRTTDCGTVSGLSYDSFGEMKSS 120
 Qy 122 SKAPPSLPSRLPGPSDT 141
 Db 121 SKAPPSLPSRLPGPSDT 140
 RESULT 142
 AAR99526
 ID AAR99526 standard; Protein; 142 AA.
 XX AAW99526;
 XX 08-JUN-1999 (first entry)
 XX Glycoprotein hormone analogue hCG-beta'-R6C.Y37C.
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
 XX human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
 XX human follicle stimulating hormone; human thyroid stimulating hormone;
 XX stability; primer; amplification; PCR; mutation.
 XX Homo sapiens.
 XX Synthetic.
 XX WO9858957-A2.
 XX 30-DEC-1998.
 XX 25-JUN-1998; 98WO-US13070.
 XX 25-JUN-1997; 97US-0050784.

XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
 XX (MCIN-) MCINNIS P G.
 XX Moyle WR;
 XX WPI; 1999-081219/07.
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
 XX or hTSH, have an intersubunit disulphide crosslink between the
 XX alpha- and beta-subunits to improve stability
 XX Example 15; Page 97; 139pp; English.
 XX The invention relates to the production of analogues of a heterodimeric
 XX subunit glycoprotein hormone (e.g. hCG, human chorionic gonadotropin
 XX hCG, human follicle stimulating hormone (hFSH), and functional
 XX hormone (hTSH), human thyroid stimulating hormone (hTSH), and functional
 XX proteins, which are modified to contain an intersubunit disulphide bond,
 XX between an alpha-subunit cysteine and a beta-subunit cysteine, for
 XX improved stability, the analogue retaining at least a portion of the
 XX bioactivity for the corresponding native GPH receptor. This sequence
 XX represents a mutated hCG-beta subunit used for the generation of the
 XX modified GPHs. The improved analogues are designed specifically to
 XX reduce perturbation of the 3-dimensional structure of the hormone, in vivo
 XX thereby creating greater stability than that of the native hormone, and
 XX agonistic activity on them. The changes stabilise the GPHs and prolong
 XX the biological activities of the hormones. The analogues can have uses
 XX as for the native GPHs.
 XX Sequence 142 AA;
 SQ
 Query Match 84.2%; Score 654; DB 20; Length 142;
 Best Local Similarity 98.4%; Pred. No. 5.8e-52;
 Matches 120; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 Qy 2 SKEPLRRCRPNATLAVKEGCPVCIWNTTICAGCPMTVRVLSGLVLPALPQVWYR 61
 Db 21 SKEPLRRCRPNATLAVKEGCPVCIWNTTICAGCPMTVRVLSGLVLPALPQVWYR 80
 Qy 62 DYRFESIRLPGCGPVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDPRFQDSSS 121
 Db 81 DYRFESIRLPGCGPVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDPRFQDSSS 140
 Qy 122 SK 123
 Db 141 SK 142
 RESULT 143
 AAR15076
 ID AAR15076 standard; Protein; 145 AA.
 XX AAR15076;
 XX 11-FEB-1992 (first entry)
 XX HCG/hFSH chimera, B16.
 XX Glycoprotein hormone; fertility; immuno-castration;
 XX immuno-contragestive; vaccine; human chorionic gonadotropin;
 XX follicle stimulating hormone; FSH; CG;
 XX Homo sapiens.
 XX WO9116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX Table II; Page 61; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 39, 41-43, 45-53, 55, 56, 58, and 94-97 replaced by the
 CC corresponding residues in the hFSH protein. It was pred. by site
 CC directed mutagenesis of a cDNA sequence encoding the hCG beta subunit.
 CC The analogue of the hCG beta subunit has a high affinity for both
 CC LH and FSH receptors and may be useful for inducing infertility
 CC in men and women and the promotion of fertility in male and female
 CC animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).
 XX Sequence 145 AA:
 SQ
 Query Match 84.0%; Score 653; DB 12; Length 145;
 Best Local Similarity 85.9%; Pred. No. 7.3e-52;
 Matches 122; Conservative 4; Mismatches 12; Indels 4; Gaps 2;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVRLQGLPALPQVYCYNR 59
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVRLQGLPALPQVYCYNR 58
 QY 60 YDVFESIRLPCGPRGVNPNVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 119
 DB 59 YDVFESIRLPCGPRGVNPNVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 118
 QY 120 SSSRAPPSLPSPRLPGPSDT 141
 DB 119 SSSRAPPSLPSPRLPGPSDT 140
 RESULT 144
 ID AAU04603 standard; Protein; 234 AA.
 XX AAU04603;
 XX 23-OCT-2001 (first entry)
 XX Single chain gonadotropin analogue #2.
 KW Human; glycoprotein hormone; Infertility; in vivo fertilisation;
 KW single chain gonadotropin.
 XX Homo sapiens.
 XX US6242580-B1.
 XX 05-JUN-2001.
 XX 31-MAR-1999; 99US-0282357.
 XX 25-AUG-1997; 97US-0918288.
 XX 18-FEB-1994; 94US-0199382.
 XX 12-AUG-1994; 94US-0289396.
 XX 22-SEP-1994; 94US-0310590.
 XX 04-NOV-1994; 94US-0334628.
 XX 07-DEC-1994; 94US-0351591.
 XX 07-JUN-1995; 95US-0475049.
 XX 09-MAY-1997; 97US-0853524.
 XX (UNIM) UNIV WASHINGTON.
 XX

PI Boime I, Moyle WR;
 XX WPI: 2001-424301/45.
 XX N-PSDB; AAS08487.
 XX New single chain forms of the glycoprotein hormone quartet useful for
 PT generating antibodies specifically immunoreactive with the new
 PT compounds, in treating infertility, or as aids for in vivo
 XX fertilization techniques.
 XX Example 6; Fig 6; 86pp; English.
 XX The sequence represents the amino acid sequence of single chain
 CC gonadotropin analogue #2. The glycoprotein hormone analogue is
 CC useful for generating antibodies specifically immunoreactive with new
 CC compounds, as a substitute for the heterodimeric forms of the hormones,
 CC in the treatment of infertility, as an aid for in vivo fertilization
 CC techniques, and in other therapeutic methods associated with the native
 CC hormone, and in the treatment of infertility. The analogue is a
 CC monomer similar to the heterodimer as a diagnostic tool to detect the
 CC presence of antibodies with respect to the native proteins in the
 CC biological samples, as a control reagent in assay kits for assessing the
 CC levels of these hormones in various samples, and in detecting and
 CC purifying receptors to which the native hormones bind. The single chain
 CC forms of the heterodimers or homodimers have the following advantages
 CC over their dimeric forms: they are more stable, problems of recombinant
 CC production are reduced since only a single gene is needed to transcribe,
 CC translate and process, provide an alternate form thus permitting fine
 CC tuning of starting materials for identifying truncated forms with the
 CC analogue starting materials for identifying truncated forms with the
 CC activity of the dimer. The linkage between the subunits permits the
 CC protein to be engineered without disturbing the overall folding of the
 CC protein.
 XX Sequence 234 AA:
 SQ
 Query Match 83.4%; Score 648; DB 22; Length 234;
 Best Local Similarity 95.4%; Pred. No. 3.4e-51;
 Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVRLQGLPALPQVYCYNR 61
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVRLQGLPALPQVYCYNR 80
 QY 62 YDVFESIRLPCGPRGVNPNVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 121
 DB 81 YDVFESIRLPCGPRGVNPNVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 140
 QY 122 SKAP 125
 DB 141 GSNP 144
 RESULT 145
 ID AAE04475 standard; Protein; 234 AA.
 XX AAE04475;
 XX AAE04475;
 XX 04-SEP-2001 (first entry)
 XX Human single chain gonadotropin analog no:2.
 KW Human; single chain gonadotropin analog no:2; anti-infertility; drug;
 KW peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;
 KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 KW glycoprotein; Infertility; fuslon protein.
 XX Homo sapiens.
 XX Synthetic.
 XX Key Location/Qualifiers
 XX Region 21..134
 XX

FT /note= "Corresponds to 1-114 amino acids of human
FT chorionic gonadotropin (CG) beta-subunit"
FT 135..142
FT /note= "Linker peptide"
FT 143..234
FT /note= "Corresponds to 1-92 amino acids of human single
FT chain gonadotropin alpha subunit"
XX USG238890-B1.
XX 29-MAY-2001.
XX 25-AUG-1997: 97US-0918288.
XX 18-FEB-1994: 94US-0199382.
XX 12-DEC-1994: 94US-036396.
XX 22-SEP-1994: 94US-010596.
XX 04-NOV-1994: 94US-0334628.
XX 07-DEC-1994: 94US-0351591.
XX 07-JUN-1995: 95US-0475049.
XX 09-MAY-1997: 97US-0853524.
XX (UNIW) UNIV WASHINGTON.
XX Bolme I, Moyle WR;
XX WPI: 2001-366474/38.
XX N-PSDB; RA008787.
XX
XX New DNA or RNA encoding single chain protein useful in treating
XX infertility, as aids in vitro fertilization techniques, or other
XX therapeutic methods associated with the native hormones .
XX
XX Claim 9: Fig 6: 87pp: English.
XX
XX The invention relates to human single chain forms of the glycoprotein
XX hormone quartet which is an agonist or antagonist of luteinising hormone
XX (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
XX (TSH) or human chorionic gonadotropin (CG). These hormones are heterodimers
XX having identical alpha subunits and different beta subunits. The agonist
XX forms of single chain hormones are used in treating infertility, as aids
XX in vitro fertilisation techniques, and other therapeutic methods
XX associated with the native hormones. The single chain hormones are useful
XX as reagents in a manner similar to heterodimers, as diagnostic tools to
XX detect the presence of antibodies with respect to the native proteins in
XX biological samples, as control reagents in assay kits for assessing the
XX levels of these hormones in various samples, in detecting and purifying
XX sera to which the native hormones bind. The single chain hormones
XX are also used in the treatment of infertility, as agonists or
XX antagonist of the native hormones. They are used as artificial
XX isolation of subsequent preparations of these materials and to monitor
XX levels of single chain hormones administered as drugs. The single chain
XX glycoproteins are used to generate antibodies specifically immunoreactive
XX with these new compounds, as substitutes for the heterodimeric forms of
XX hormones. The present sequence is human single chain gonadotropin
XX analog no:2 related to the invention. Analog no:2 is a fusion protein
XX consisting of human chorionic gonadotropin (CG) beta-subunit (1-114
XX amino acids) fused to human single chain gonadotropin alpha-subunit
XX (1-92 amino acids) by linker peptides. This analog serves as a useful
XX starting compound for template directed vaccine design and for the
XX development of hormone-specific vaccines for use in humans.
XX
XX Sequence 234 AA:

Query Match 83.4%; Score 648; DB 22; Length 234;
Best Local Similarity 95.2%; Pred. No. 3.4e-51;
Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTNRVLQGVLPALPQVYCNTR 61
DB 21 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTNRVLQGVLPALPQVYCNTR 80
OY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPITCDDPRQSSS 121

DB 81 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPITCDDPRGSGS 140
OY 122 SKAP 125
DB 141 GSAP 144
RESULT 146
AAR15162
ID AAR15162 standard; Protein; 116 AA.
AC AAR15162;
XX
XX 11-FEB-1992 (first entry)
XX hCG deletion mutant, F2.
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX Homo sapiens.
XX MO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991: 91MO-US03162.
XX 08-MAY-1990: 90US-0520703.
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX Table VII: Page 66; 94pp: English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 117-145 deleted. It was prepd. using PCR mutagenesis to
XX insert a stop codon into the gene. It may be useful as an agonist
XX for suppression of gonadal activity during chemotherapy.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 116 AA:
Query Match 82.9%; Score 644; DB 12; Length 116;
Best Local Similarity 100.0%; Pred. No. 3.8e-51;
Matches 116; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTNRVLQGVLPALPQVYCNTR 61
DB 1 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTNRVLQGVLPALPQVYCNTR 60
OY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPITCDDPRQ 117
DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLCRRSTTDCGGPKDHPITCDDPRQ 116
RESULT 147
AAY43282
ID AAY43282 standard; Protein; 212 AA.
AC AAY43282;
XX
XX 19-JAN-2000 (first entry)
XX HCG/hESH beta subunit-Jun fusion protein sequence.

XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;
 KW beta subunit; therapy; Jun.
 XX Homo sapiens.
 OS Synthetic.
 EN WO9953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99WO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 PT Moyle WR;
 XX MPI: 1999-620431/53.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 XX Example 4; Fig 17; 73pp; English.
 CC This sequence is a fusion protein of hCG/hFSH and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-terminus of both subunits or the C-terminus of the
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC and thus receptor-binding and immunogenic properties) to native dimers,
 CC poorly, or not at all. The N-terminal part of glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 212 AA:
 SQ
 Query Match 82.4%; Score 640; DB 20; Length 212;
 Best Local Similarity 86.4%; Pred. No. 1.6e-50;
 Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;
 OY 2 SKEPLPRCRPINATLAVKESGCPVCTVTTCAGYCTPTMRVVGQVLPALPOVVCNVR 61
 DB 68 SKEPLPRCRPINATLAVKESGCPVCTVTTCAGYCTPTMRVVGQVLPALPOVVCNVR 127
 OY 62 DYRFESIRLPGCRPNVPVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 121
 DB 128 DYRFESIRLPGCRPNVPVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 187
 OY 122 SKAPPPSLPSRLPGPSDT 141
 DB 188 SKAPPPSLPSRLPGPSDT 207
 RESULT 148
 ID AAY43289 standard; Protein: 273 AA.
 XX AAY43289;
 XX

DT 19-JAN-2000 (first entry)
 XX HCG/hFSH beta subunit-Jun fusion protein sequence.
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;
 XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;
 KW beta subunit; therapy; Jun.
 XX Homo sapiens.
 OS Synthetic.
 EN WO9953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99WO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 PT Moyle WR;
 XX MPI: 1999-620431/53.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX
 XX Example 6; Fig 18; 73pp; English.
 CC This sequence is a fusion protein of hCG/hFSH and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-terminus of both subunits or the C-terminus of the
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC and thus receptor-binding and immunogenic properties) to native dimers,
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 273 AA:
 SQ
 Query Match 82.4%; Score 640; DB 20; Length 273;
 Best Local Similarity 86.4%; Pred. No. 2.1e-50;
 Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;
 OY 2 SKEPLPRCRPINATLAVKESGCPVCTVTTCAGYCTPTMRVVGQVLPALPOVVCNVR 61
 DB 129 SKEPLPRCRPINATLAVKESGCPVCTVTTCAGYCTPTMRVVGQVLPALPOVVCNVR 188
 OY 62 DYRFESIRLPGCRPNVPVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 121
 DB 189 DYRFESIRLPGCRPNVPVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 248
 OY 122 SKAPPPSLPSRLPGPSDT 141
 DB 249 SKAPPPSLPSRLPGPSDT 268
 RESULT 149
 ID AAY43296 standard; Protein: 273 AA.
 XX AAY43296;
 XX

```

XX AAY41296;
AC 19-JAN-2000 (first entry)
DT HCG/HFSH beta subunit-Jun fusion protein sequence.
DE Cysteine knot protein; protein formation; heterodimeric protein analog;
DE deglycosylated; glycoprotein hormone; fertility;
KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;
KW beta subunit; therapy; Jun.
XX Homo sapiens.
OS Synthetic.
XX W09953065-A1.
XX 21-OCT-1999.
XX 13-APR-1999; 99MO-US08018.
XX 14-APR-1998; 98US-0059625.
XX (UYNE-) UNIV NEW JERSEY.
XX Moyle WR;
XX WPT; 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
XX from subunits of cysteine knot proteins.
XX Example 6; Fig 19; 73pp; English.
XX This sequence is a fusion protein of HCG/HFSH and Jun. The invention
XX relates to a method of forming a cysteine knot protein (i) having alpha
XX and beta-subunits comprising attaching a dimerisation domain (DD) to
XX either the N-termini of both subunits or the N-terminus of the
XX alpha-subunit and to the C-terminus of the beta-subunit and dimerising
XX the alpha-subunit and the beta-subunit to form a heterodimer. The
XX method is used to produce analogues (agonists or antagonists) of biologically
XX active hormones, particularly gonadotropins. The method of forming a
XX glycoprotein hormone, potentially useful, e.g. for treating infertility
XX where caused by polycystic ovarian disease (associated with excessive
XX levels of luteinising hormone). Products that retain DD's are also useful
XX as immunogens or antigens (since a DD may contain highly antigenic
XX amino acid sequences). Attachment of a DD (which may be removed later)
XX facilitates the formation of heterodimers, that have similar structures
XX (and thus receptor-binding and immunogenic properties) to native dimers,
XX and allows the combination of subunits that would otherwise combine
XX to form a heterodimer. The method is particularly useful for the formation
XX of modified without loss of activity and attachment of DD's to the
XX formation of homodimers. Heterodimers have longer circulation times in
XX vivo than individual subunits.
XX Sequence 273 AA:
XX
XX Query Match 82.4%; Score 640; DB 20; Length 273;
XX Best Local Similarity 86.4%; Pred. No. 2.1e-50;
XX Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVEKCCPCVITNTTICAGYCPPTWTRVLOGVLPALPQVVCNVR 61
XX DB 129 SKEPLRPRCPINATLAVEKCCPCVITNTTICAGYCPPTWTRVLOGVLPALPQVVCNVR 188
XX
XX QY 62 DYRFESIRLPGCPGVNPNVSYVALSCQCALCRSTTDCGPKDHPKPTCDPRFQDSSS 121
XX DB 189 DYRFESIRLPGCPGVNPNVSYVALSCQCALCRSTTDCGPKDHPKPTCDPRFQDSSS 248
XX
XX QY 122 SKAPPSLPSPSLRQPSDT 141
XX DB 249 SKAPPSLPSPSLRQPSDT 268

```

```

RESULT 150
AAR86248
ID AAR86248 standard; Protein; 234 AA.
XX
XX AAR86248;
XX
XX 26-APR-1996 (first entry)
XX Single chain gonadotropin analogue 2.
XX Single chain gonadotropin analogue 2.
KW alpha; beta; subunit; analogue; human chorionic gonadotropin; hCG;
KW inhibit; stimulate; increase; lutropin; luteinising hormone; LH;
KW follicle stimulating hormone; FSH; vaccine; contraceptive.
XX Synthetic.
XX Location/Qualifiers
XX Key 1..30
XX Peptide /label= leader
XX Region 21..134
XX /label= hCG_beta_subunit_(1-114)
XX Misc-difference 70
XX /note= "Arg corresponds to CCG codon"
XX Region 135..142
XX /label= linker
XX Region 143..234
XX /label= Gonadotropin_alpha_subunit_(1-92)
XX
XX W09522340-A1.
XX
XX 24-AUG-1995.
XX
XX 17-FEB-1995; 95WO-US02067.
XX
XX 18-FEB-1994; 94US-0199382.
XX
XX (SENS-) SENS1-TEST.
XX
XX Moyle WR;
XX WPT; 1995-302553/39.
XX N-PSDB; AAT03219.
XX
XX Methods for altering fertility in mammals, esp. humans - e.g.
XX stimulating fertility by reducing the activity and/or levels of
XX circulating glyco:protein hormones having lutropin activity
XX
XX Example 13 and Claim 39; Fig 7; 102pp; English.
XX
XX Analogue 2 (human CG-beta(1-114)-linker-human CG-alpha(1-92)) is a
XX specific example of a single chain gonadotropin having a chorionic
XX gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-
XX subunit at the C-terminus, joined by a linker of 1-16 amino acids.
XX The analogue has luteinising hormone (lutropin) activity and is
XX useful for inducing ovulation and increasing male fertility.
XX
XX Sequence 234 AA:
XX
XX Query Match 82.2%; Score 639; DB 16; Length 234;
XX Best Local Similarity 94.4%; Pred. No. 2.2e-50;
XX Matches 117; Conservative 0; Mismatches 7; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVEKCCPCVITNTTICAGYCPPTWTRVLOGVLPALPQVVCNVR 61
XX DB 21 SKEPLRPRCPINATLAVEKCCPCVITNTTICAGYCPPTWTRVLOGVLPALPQVVCNVR 80
XX
XX QY 62 DYRFESIRLPGCPGVNPNVSYVALSCQCALCRSTTDCGPKDHPKPTCDPRFQDSSS 121
XX DB 81 DYRFESIRLPGCPGVNPNVSYVALSCQCALCRSTTDCGPKDHPKPTCDPRFQDSSS 140
XX
XX 122 SKAP 125
XX

```

Db 141 GSAP 144

RESULT 151

AA04509 standard; Protein: 145 AA.

AC AAR15073;

DT 11-FEB-1992 (first entry)

XX HCG/hFSH chimera, B13.

XX Glycoprotein hormone; fertility; immuno-castration;

XX immuno-contragestive; vaccine; human chorionic gonadotropin;

XX follicle stimulating hormone; FSH; CG;

XX Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0320703.

XX (UTNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-contragestion agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having

XX residues 94-97, 102-107, 109, 110, and 112-118 replaced by the

XX site directed mutagenesis of a cDNA sequence encoding the hCG beta

XX subunit. The chimeric hormone is capable of directing hormone

XX binding to both LH and FSH receptors and may be useful for the

XX treatment of infertility in men and women and the promotion of

XX fertility in male and female animals. (See AAR15043, AAR15061-R15125

XX and AAR15161-R15198).

XX Sequence 145 AA:

Query Match 82.1%; Score 638; DB 12; Length 145;

Best Local Similarity 86.4%; Pred No 1.7e-50;

Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVTTCGCTMTVRVGVLPALPQVNCNR 61

Db 1 SKEPLRPRCPINATLAVEKEGCPVCTVTTCGCTMTVRVGVLPALPQVNCNR 60

QY 62 DVRFESIRLPGCPVWPVYVYVALSCQCALCRSTDCGPGDPHPLTCDPFRQSSS 121

Db 61 DVRFESIRLPGCPVWPVYVYVALSCQCALCRSTDCGTVRGLSTDFGEMKSS 120

QY 122 SKAPPSPSPSRLPGPSOT 141

Db 121 SKAPPSPSPSRLPGPSOT 140

RESULT 152

AAE04509

ID AAE04509 standard; Protein: 234 AA.

XX AAE04509;

XX 04-SEP-2001 (first entry)

XX Human single chain gonadotropin analog no:2a.

XX peptide therapy; luteinising hormone; LH; follicle stimulating hormone;

XX FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;

XX glycoprotein; infertility; fusion protein; mutant; mutein.

XX Homo sapiens.

XX Synthetic.

XX Key Location/Qualifiers

XX Region 21..134

XX /note= "Corresponds to 1-114 amino acids of human

XX chorionic gonadotropin (CG) beta-subunit"

XX Misc-difference 33

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Misc-difference 5

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Region 135..142

XX /note= "Linker peptide"

XX Region 143..234

XX /note= "Corresponds to 1-92 amino acids of human single

XX chain gonadotropin alpha-subunit"

XX Misc-difference 194

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Misc-difference 220

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX USG238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 97US-0918288.

XX 18-FEB-1994; 94US-0199382.

XX 12-AUG-1994; 94US-0289396.

XX 22-SEP-1994; 94US-0310590.

XX 04-NOV-1994; 94US-0334628.

XX 07-DEC-1994; 94US-0351591.

XX 07-JUN-1995; 95US-0475049.

XX 09-MAY-1997; 97US-0853524.

XX (UNIW) UNIV WASHINGTON.

XX Bolme I, Moyle WR;

XX WPI: 2001-366474/38.

XX New DNA or RNA encoding single chain protein useful in treating

XX infertility, as aids in vitro fertilization techniques, or other

XX therapeutic methods associated with the native hormones

XX Claim 9; Column -; 87pp; English.

XX The invention relates to human single chain forms of the glycoprotein

XX hormone hCG which is an agonist antagonist of luteinising hormone

XX (LH) and chorionic gonadotropin (CG). All these hormones are heterodimers

XX (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers

XX having identical alpha subunits and differing beta subunits. The agonist

XX forms of single chain hormones are used in treating infertility, as aids

XX in vitro fertilisation techniques, and other therapeutic methods

XX associated with the native hormones. The single chain hormones are useful

XX as reagents in a manner similar to heterodimers, as diagnostic tools to

XX detect the presence of antibodies with respect to the native proteins in

XX biological samples, as control reagents in assay kits for assessing the

XX levels of these hormones in various samples, in detecting and purifying

KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 OS Homo sapiens.
 OS Synthetic.
 PN W09953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99MO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX Example 6; Fig 18; 73pp; English.
 XX This sequence is a fusion protein of hCG/HTSH and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta-subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-terminal of the C-terminus of the alpha-subunit or the
 CC alpha-subunit and the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 273 AA:
 Query Match 81.2%; Score 631; DB 20; Length 273;
 Best Local Similarity 85.7%; Pred. No. 1.4e-49;
 Matches 120; Conservative 2; Mismatches 18; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVNTTICAGYCPMTNRLVQLGVPALPQVYCHYR 61
 DB 129 SKEPLRRCRPNATLAVEKEGCPVCITVNTTICAGYCPMTNRLVQLGVPALPQVYCHYR 188
 QY 62 DYRFESIRLPGCGPVNPNVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121
 DB 189 DYRFESIRLPGCGPVNPNVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 248
 QY 122 SKAPPSLPSPRLPGPSDT 141
 DB 249 SKAPPSLPSPRLPGPSDT 268
 RESULT 157
 AAY43297
 ID AAY43297 standard; Protein; 273 AA.
 XX
 AC AAY43297;
 XX
 DT 19-JAN-2000 (first entry)
 XX

DE HCG/HTSH beta subunit-Jun fusion protein sequence.
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen;
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
 KW beta subunit; therapy; Jun.
 XX Homo sapiens.
 OS Synthetic.
 PN W09953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99MO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX Moyle WR;
 XX WPI: 1999-620431/53.
 PT Methods for producing heterodimers, particularly analogues of hormones,
 PT from subunits of cysteine knot proteins -
 XX Example 6; Fig 19; 73pp; English.
 XX This sequence is a fusion protein of hCG/HTSH and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta-subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-terminal of the C-terminus of the alpha-subunit or the
 CC alpha-subunit and the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where caused by polycystic ovarian disease (associated with excessive
 CC levels of luteinising hormone). Products that retain DD's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 273 AA:
 Query Match 81.2%; Score 631; DB 20; Length 273;
 Best Local Similarity 85.7%; Pred. No. 1.4e-49;
 Matches 120; Conservative 2; Mismatches 18; Indels 0; Gaps 0;
 QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVNTTICAGYCPMTNRLVQLGVPALPQVYCHYR 61
 DB 129 SKEPLRRCRPNATLAVEKEGCPVCITVNTTICAGYCPMTNRLVQLGVPALPQVYCHYR 188
 QY 62 DYRFESIRLPGCGPVNPNVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121
 DB 189 DYRFESIRLPGCGPVNPNVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 248
 QY 122 SKAPPSLPSPRLPGPSDT 141
 DB 249 SKAPPSLPSPRLPGPSDT 268
 RESULT 158
 AAR15172
 ID AAR15172 standard; Protein; 116 AA.
 XX
 DT AAR15172;
 XX

XX 11-FEB-1992 (first entry)
 XX HCG methionine substitution mutant, G4.
 XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.
 XX Homo sapiens.
 XX MO9116922-A.
 XX 14-NOV-1991.
 XX 07-MAY-1991; 91WO-US03162.
 XX 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK, Moyle WR;
 XX WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 XX Table VIII; Page 67; 94pp; English.
 XX The sequence is an analogue of mature hCG beta subunit having
 XX residues 109 and 110 replaced by methionine and alanine residues
 XX respectively, and residues 117-145 deleted. This introduces an
 XX additional cleavage site for CNBr, useful for determining the
 XX disulphide bonds. This can be used to show that mutagenesis has
 XX not altered the "normal" disulphide pattern of analogues, and for
 XX examining protein folding.
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
 XX Sequence 116 AA;
 XX

Query Match 81.04; Score 629; DB 12; Length 116;
 Best Local Similarity 98.34; Pred. No. 8.7e-50;
 Matches 114; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 2 SKEPLPRCPINATLAVEKGGPCVITVTTCAGYCTPTMTVRVQGVLPALPOVCNVR 61
 Db 1 SKEPLPRCPINATLAVEKGGPCVITVTTCAGYCTPTMTVRVQGVLPALPOVCNVR 60
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPKCDPRFQ 117
 Db 61 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPKCDPRFQ 116
 RESULT 159
 AAR86260
 ID AAR86260 standard; Protein: 234 AA.
 AC AAR86260;
 XX 08-MAY-1996 (first entry)
 XX Partially deglycosylated single chain gonadotropin analogue 2a.
 XX Single chain gonadotropin; human chorionic gonadotropin; hCG;
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;
 KW inhibit; stimulate; increase; lutropin; lutinising hormone; LH;
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.
 XX Synthetic.
 XX Key Location/Qualifiers
 FH Peptide 1..20
 FT /label= leader

FT Region 21..134
 FT /label= HCG_beta_subunit_(1-114)
 FT Misc-difference 33
 FT /note= "wild-type Asn at position 13 of the beta-
 FT subunit is pref. replaced by another amino
 FT acid (esp. Gln) to remove a glycosylation
 FT site."
 FT Misc-difference 50
 FT /note= "wild-type Asn at position 10 of the beta-
 FT subunit is pref. replaced by another amino
 FT acid (esp. Gln) to remove a glycosylation
 FT site."
 FT Misc-difference 70
 FT /note= "Arg corresponds to CCG codon"
 FT Region 135..142
 FT /label= linker
 FT Region 143..234
 FT /label= Gonadotropin_alpha_subunit_(1-92)
 FT Misc-difference 13
 FT /note= "wild-type Asn at position 52 of the alpha-
 FT subunit is pref. replaced by another amino
 FT acid (esp. Gln) to remove a glycosylation
 FT site."
 FT Misc-difference 220
 FT /note= "wild-type Asn at position 78 of the alpha-
 FT subunit is pref. replaced by another amino
 FT acid (esp. Gln) to remove a glycosylation
 FT site."
 XX MO9522340-A1.
 XX 24-AUG-1995.
 XX 17-FEB-1995; 95WO-US02067.
 XX 18-FEB-1994; 94US-0199382.
 XX (SENS-) SENSI-TEST.
 XX Moyle WR;
 XX WPI; 1995-302553/39.
 XX Methods for altering fertility in mammals, esp. humans - e.g.
 XX stimulating fertility by reducing the activity and/or levels of
 XX circulating glyco-protein hormones having lutropin activity
 XX
 XX Example 24; Fig 7 and Page 60; 102pp; English.
 XX The single-chain gonadotropin analogue 2a (human CG-beta(1-114)
 XX [NH3/302]-114) (human CG-beta(1-92) [NH3/378]) can be derived
 XX from analogue 2b by deleting at least one of the four glycosylation
 XX sites. The partially deglycosylated analogue has anti-luteinising
 XX hormone (lutropin) activity and can be used for facilitating
 XX ovulation, terminating pregnancy and reducing androgen secretion.
 XX The effects of analogue 2a depend upon the time it is administered;
 XX it will elicit fertility when given early in the menstrual cycle but
 XX will inhibit fertility when given later.
 XX Sequence 234 AA;
 XX

Query Match 80.43; Score 625; DB 16; Length 234;
 Best Local Similarity 92.74; Pred. No. 4.1e-49;
 Matches 115; Conservative 0; Mismatches 9; Indels 0; Gaps 0;
 QY 2 SKEPLPRCPINATLAVEKGGPCVITVTTCAGYCTPTMTVRVQGVLPALPOVCNVR 61
 Db 21 SKEPLPRCPINATLAVEKGGPCVITVTTCAGYCTPTMTVRVQGVLPALPOVCNVR 80
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPKCDPRFQSSS 121
 Db 81 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPKCDPRFQSSGS 140

OY 122 SKAP 125
DB 141 GSAP 144
RESULT 160
AAW93128 standard; Protein; 165 AA.
XX AAW93528;
XX AAW95528;
DT 08-JUN-1999 (first entry)
XX Glycoprotein hormone analogue CFC94-117-beta-R6C.Y37C.
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;
XX stability; primer; amplification; PCR; mutation.
XX Homo sapiens.
XX Synthetic.
XX W09858957-A2.
XX 30-DEC-1998.
XX 25-JUN-1998; 98WO-US13070.
XX 25-JUN-1997; 97US-0050784.
XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
XX (MCIN-) MCINNIS P G.
XX Moyle WR;
XX WPI; 1999-081219/07.
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX of hTSH, hLH and hFSH and intersubunit disulphide crosslink between the
XX alpha- and beta-subunits to improve stability
XX Example 17; Page 99; 139pp; English.
XX The invention relates to the production of analogues of a heterodimeric
XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX (hCG), human luteinising hormone (hLH), human follicle stimulating
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX mutants, which are modified to contain an intersubunit disulphide bond,
XX between an alpha-subunit cysteine and a beta-subunit cysteine, for
XX increased stability. The analogues are produced by recombinant techniques
XX bioactivity for the corresponding hormone. The analogues also include
XX represents a chimeric hCG/hFSH-beta subunit in which amino acid residues
XX 95-103 of the hFSH-beta subunit replace amino acid residues 101-109 of
XX the hCG-beta subunit. The chimeric protein used for the generation of
XX the modified GPHs. The improved analogues are designed specifically
XX to reduce perturbation of the 3-dimensional structure of the hormone,
XX thereby creating greater likelihood that the dimer will be formed in vivo
XX and the formed dimer will have affinity for the native receptors and have
XX agonistic activity on them. The changes stabilise the GPHs and prolong
XX the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX Sequence 165 AA;

Query Match 80.2%; Score 623; DB 20; Length 165;
Best Local Similarity 85.0%; Pred. No. 4,4e-49;
Matches 119; Conservative 3; Mismatches 18; Indels 0; Gaps 0;

OY .2 SKEPLPCRPINATLAVKEGCPVITVNTTICAGCTMTTRVLQGVLPALPQVQVNYR 61
DB 21 SKEPLPCRPINATLAVKEGCPVITVNTTICAGCTMTTRVLQGVLPALPQVQVNYR 80

OY 62 DVFESIRLPGCPGVNPNVSYAVALSCCALCDSDDTCTVRLGPGSYCSFGEMKSSS 121
DB 81 DVFESIRLPGCPGVNPNVSYAVALSCCALCDSDDTCTVRLGPGSYCSFGEMKSSS 140
OY 122 SKAPPSLPSPSLRPGSDT 141
DB 141 SKAPPSLPSPSLRPGSDT 160
RESULT 161
AAE04519
ID AAE04519 standard; Protein; 234 AA.
XX AAE04519;
XX AAE04519;
DT 04-SEP-2001 (first entry)
XX Human single chain gonadotropin analog no:2b.
XX Human; single chain gonadotropin analog no:2b; anti-infertility; drug;
XX ESH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
XX glycoprotein; infertility; fusion protein; mutant; mutagen.
XX Homo sapiens.
XX Synthetic.
XX Key
XX Region 21..134
XX Location/Qualifiers
XX /note= "Corresponds to 1-114 amino acids of human
XX chorionic gonadotropin (CG) beta-subunit".
XX Misc-difference 3
XX /note= "Wild type Asn substituted with Xaa, Where Xaa
XX refers to Gln or other amino acid".
XX Misc-difference 50
XX /note= "Wild type Asn substituted with Xaa, Where Xaa
XX refers to Gln or other amino acid".
XX Misc-difference 98
XX /note= "Wild type Asn substituted with Xaa, Where Xaa
XX refers to Gln or other amino acid".
XX Misc-difference 99
XX /note= "Wild type Val substituted with Thr".
XX Region 135..142
XX /note= "Linker peptide".
XX Region 143..234
XX /note= "Corresponds to 1-92 amino acids of human single
XX chain gonadotropin alpha-subunit".
XX Misc-difference 194
XX /note= "Wild type Asn substituted with Xaa, Where Xaa
XX refers to Gln or other amino acid".
XX Misc-difference 220
XX /note= "Wild type Asn substituted with Xaa, Where Xaa
XX refers to Gln or other amino acid".
XX US6238890-B1.
XX 29-MAY-2001. 97US-0918288.
XX 25-AUG-1997; 94US-0199382.
XX 18-FEB-1994; 94US-0289396.
XX 12-AUG-1994; 94US-0310590.
XX 02-SEP-1994; 94US-0311526.
XX 07-DEC-1994; 94US-0311526.
XX 07-JUN-1995; 95US-0475049.
XX 09-MAY-1997; 97US-0853524.
XX (UNIW) UNIV WASHINGTON.
XX Boime I, Moyle WR;
XX WPI; 2001-366474/38.

XX New DNA or RNA encoding single chain protein useful in treating
PT infertility, as aids in vitro fertilization techniques, or other
PT therapeutic methods associated with the native hormones
XX
XX Claim 9: Column -, 87pp; English.
XX
XX The invention relates to human single chain forms of the glycoprotein
CC hormone which is an agonist or antagonist of luteinizing hormone
CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
CC having identical alpha subunits and differing beta subunits. The agonist
CC forms of single chain hormones are used in treating infertility, as aids
CC in vitro fertilization techniques, and other therapeutic methods
CC associated with the native hormones. The single chain hormones are useful
CC as reagents in a manner similar to heterodimers, as diagnostic tools to
CC detect the presence of antibodies with respect to the native proteins in
CC biological samples, as control reagents in assay kits for assessing the
CC presence of these hormones in various samples, in detecting and purifying
CC receptors to which these hormones bind, in detecting and purifying
CC receptors which have a defective binding site, in the preparation of
CC antihormone antibodies. They are used as purification tools for
CC isolation of subsequent preparations of these materials and to monitor
CC levels of single chain hormones administered as drugs. The single chain
CC glycoproteins are used to generate antibodies specifically immunoreactive
CC with these new compounds, as substitutes for the heterodimeric forms of
CC hormones. The present sequence is human single chain gonadotropin
CC analog no:2b related to the invention. Analog no:2b is a fusion protein
CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-114
CC amino acids) fused to a single chain gonadotropin alpha-subunit
CC (1-92 amino acids) by a linker sequence. This analog is a useful
CC starting compound for template directed vaccine design and for the
CC development of hormone-specific vaccines for use in humans.
CC Note: The present sequence is not shown in the specification, but is
CC derived from the human single chain gonadotropin analog no:2 shown
CC as SEQ ID NO: 6, in figure 6 of the specification (AAE04475).

XX Sequence 234 AA:
Query Match 79.9%; Score 621; DB 22; Length 234;
Best Local Similarity 91.9%; Pred. No. 9.4e-49;
Matches 114; Conservative 0; Mismatches 10; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCNVR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCNVR 80
OY 62 DVRFESIRLPGCPRGVNPVSVYVALSCQCALCRSTTDCGPKDHPDLPDOPR 121
DB 81 DVRFESIRLPGCPRGVNPVSVYVALSCQCALCRSTTDCGPKDHPDLPDOPR 140
OY 122 SRAIP 125
DB 141 GSAP 144
RESULT 162
AAR15119
ID AAR15119 standard; Protein: 122 AA.
XX
XX AAR15119;
XX
XX 11-FEB-1992 (first entry)
XX hCG/HLH chimera, A4.
XX Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW luteinizing hormone; LH; CG.
XX Homo sapiens.
XX
XX WO9116922-A.

XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
XX Table VI; Page 65; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 99, 113 and 115-122 replaced by the corresponding
CC residues in the human LH protein and residues 123-145 deleted.
CC The chimeric hormone may be useful in the treatment of infertility
CC in men and women and the promotion of fertility in male and female
CC animals.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 122 AA:
Query Match 79.5%; Score 618; DB 12; Length 122;
Best Local Similarity 98.2%; Pred. No. 9.1e-49;
Matches 112; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCNVR 61
DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCNVR 60
OY 62 DVRFESIRLPGCPRGVNPVSVYVALSCQCALCRSTTDCGPKDHPDLPDOPR 115
DB 61 DVRFESIRLPGCPRGVNPVSVYVALSCQCALCRSTTDCGPKDHPDLPDOPR 114
RESULT 163
AAR15095
ID AAR15095 standard; Protein: 124 AA.
XX
XX AAR15095;
XX
XX 11-FEB-1992 (first entry)
XX hCG/HLH chimera, C8.
XX Glycoprotein hormone; fertility; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW thyroid stimulating hormone; TSH; CG.
XX Homo sapiens.
XX
XX WO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX

PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 112, 113, and 115-124 replaced by the corresponding
 CC residues in the hTSH protein and residues 125-145 deleted. The
 CC chimeric hormone may be useful as a TSH antagonist for the
 CC treatment of hyperthyroidism.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 124 AA;

Query Match 79.5%; Score 618; DB 12; Length 124;
 Best Local Similarity 98.2%; Pred. No. 9.3e-49;
 Matches 112; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTIRVLOGLPALPOVYCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTIRVLOGLPALPOVYCNTR 60
 OY 62 DVRFESIRLPGCPGPNVYVAVALSQCALCRSTTDCGGPKDHPDPTCD 112
 DB 61 DVRFESIRLPGCPGPNVYVAVALSQCALCRSTTDCGGPKDHPDPTCD 111

RESULT 164

AAR15161

ID AAR15161 standard; Protein: 111 AA.

AC AAR15161;

DT 11-FEB-1992 (first entry)

DE hCG deletion mutant, FI.

XX Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 OS Homo sapiens.

PN W09116922-A.

PD 14-NOV-1991.

XX 07-MAY-1991; 91MO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) ONIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

PI MPI; 1991-353528/48.

XX New glyco-protein hormone analogues . for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.

XX Table VII; Page 66; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
 CC residues 112-145 deleted. It was prepd. using PCR mutagenesis to
 CC insert a stop codon into the gene. It may be useful as an agonist
 CC for suppression of gonadotrophic activity during chemotherapy.
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 111 AA;

Query Match 79.2%; Score 615; DB 12; Length 111;
 Best Local Similarity 100.0%; Pred. No. 1.5e-48;
 Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTIRVLOGLPALPOVYCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGTCPTMTIRVLOGLPALPOVYCNTR 60
 OY 62 DVRFESIRLPGCPGPNVYVAVALSQCALCRSTTDCGGPKDHPDPTCD 112
 DB 61 DVRFESIRLPGCPGPNVYVAVALSQCALCRSTTDCGGPKDHPDPTCD 111

RESULT 165

AAR86270

ID AAR86270 standard; Protein: 234 AA.

AC AAR86270;

DT 08-MAY-1996 (first entry)

XX Single chain gonadotropin analogue 2b with extra glycosylation site.
 DE Single chain gonadotropin; human chorionic gonadotropin; hCG;
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;
 KW inhibit; stimulate; increase; lutropin; luteinizing hormone; LH;
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.
 OS Synthetic.

XX Key Location/Qualifiers

FT Peptide 1..20

FT Region 21..334

FT /label- hCG_beta_subunit_(1-114)

FT /note- "wild-type Asn at position 13 of the beta-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT /note- "wild-type Asn at position 30 of the beta-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT /note- "Arg corresponds to CCG codon"

FT /note- "wild-type Pro at position 78 of the beta-subunit can be replaced by another amino acid to agree with the glycosylation site motif"

FT /note- "wild-type Val at position 79 of the beta-subunit is replaced by Thr to agree with the glycosylation site motif"

FT Region 135..142

FT /label- linker

FT Region 143..234

FT /label- Gonadotropin_alpha_subunit_(1-92)

FT /note- "wild-type Asn at position 52 of the alpha-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT /note- "wild-type Asn at position 78 of the alpha-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

PN W09522340-AL.

PD 24-AUG-1995.

XX 17-FEB-1995; 95MO-US02067.

PR 18-FEB-1994; 94US-0199382.

XX (SENS-) SENS-TEST.

XX Moyle WR.

XX WPI; 1995-302553/39.

XX Methods for altering fertility in mammals, esp. humans - e.g.
PT stimulating fertility by reducing the activity and/or levels of
PT circulating glyco:protein hormones having lutropin activity
XX
PS Example 25; Fig 7 and Page 60; 102pp; English.

XX The single-chain gonadotropin analogue 2b (human CG-beta(1-114)
CC [N13X,N30X,P78X,V797]-linker-human CG-alpha(1-92)[N52X,N78X]) is
CC an example of a chimeric glycopeptide hormone having an extra
CC glycosylation site. Addition of oligosaccharides has a positive
CC effect on stability of the hormone in circulation and can be used to
CC prevent unwanted antibody responses. The chimeric hormone present
CC analogue has anti-luteinizing hormone (lutropin) activity and can
CC be used for facilitating ovulation, terminating pregnancy and
CC reducing androgen secretion.

XX Sequence 234 AA:

Query Match 78.8%; Score 612; DB 16; Length 234;
Best Local Similarity 91.1%; Pred. No. 6.2e-48;
Matches 113; Conservative 0; Mismatches 11; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGTCPTNTRVLQGVLPALPQVVCNVR 61

Db 21 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGTCPTNTRVLQGVLPALPQVVCNVR 80

QY 62 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSS 121

Db 81 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSS 140

QY 122 SKAP 125

Db 141 GSAP 144

RESULT 166

AA15087

ID AA15087 standard; Protein: 115 AA.

XX AA15087:

DT 11-FEB-1992 (first entry)

DE hCG/hFSH chimera, B27.

KW Glycoprotein hormone; fertility; immuno-castration;

KW immuno-contragative; vaccine; human chorionic gonadotropin;

XX follicle stimulating hormone; FSH; CG;

XX Homo sapiens.

XX WO9116922-A.

PD 14-NOV-1991.

PF 07-MAY-1991; 91WO-US03162.

PR 08-MAY-1990; 90US-0520703.

PA (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

PT New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contragative vaccines.
XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hFSH beta subunit having
CC several residues replaced by the corresponding residues in the hCG
CC protein. The chimeric hormone is capable of directing hormone
CC treatment to pituitary receptors and may be useful for the
CC treatment of infertility. Residues 115-117, 119-122 and 123-145
CC fertility in male and female animals. (See AARI5043, AARI5061-R15125 and
CC AARI5161-R15198).

XX Sequence 115 AA:

Query Match 77.2%; Score 600; DB 12; Length 115;
Best Local Similarity 98.2%; Pred. No. 3.7e-47;
Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGTCPTNTRVLQGVLPALPQVVCNVR 61

Db 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGTCPTNTRVLQGVLPALPQVVCNVR 60

QY 62 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCD 112

Db 61 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCD 111

RESULT 167

AA15108

ID AA15108 standard; Protein: 122 AA.

AC AA15108:

DT 11-FEB-1992 (first entry)

DE hCG/BLH chimera, D12.

KW Glycoprotein hormone; immuno-castration;

KW immuno-contragative; vaccine; human chorionic gonadotropin;

XX luteinizing hormone; LH; CG; Bovine.

XX Homo sapiens.

XX Bos taurus.

OS WO9116922-A.

PN 14-NOV-1991.

PD 07-MAY-1991; 91WO-US03162.

PF 08-MAY-1990; 90US-0520703.

PR (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-castration agents, for suppressing reproductive system

XX development and as immuno-contragative vaccines.

XX Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having
CC residues 105-107, 110, 113, 115-117, and 119-122 replaced by the
CC corresponding residues in the bovine LH protein and residues
CC 123-145 deleted. The chimeric hormone may be useful for identifying
CC residues which are important for binding to the human receptor and
CC may also have applications as an immunogen, agonist and/or antagonist.
CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.

```

XX SQ Sequence 122 AA;
Query Match 76.18; Score 591.5; DB 12; Length 122;
Best Local Similarity 87.58; Pred. No. 2.3e-46;
Matches 112; Conservative 1; Mismatches 6; Indels 9; Gaps 1;

QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 61
   |||||
Db 1 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 60

QY 62 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 121
   |||||
Db 61 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 114

QY 122 SKAPPSL 129
   |||
Db 115 ---PFP51 119

RESULT 168
AAR15123
ID AAR15123 standard; Protein: 122 AA.
XX
AC AAR15123;
XX
XT 11-FEB-1992 (first entry)
XX
DE hCG/hLH chimera, A8.
XX
KW Glycoprotein hormone; Immuno-castration;
KW Immuno-contragestive; vaccine; human chorionic gonadotropin;
KW Luteinizing hormone; LH; CG.
XX
OS Homo sapiens.
XX
PN WO9116922-A.
XX
PD 14-NOV-1991.
XX
PF 07-MAY-1991; 91WO-US03162.
XX
PR 08-MAY-1990; 90US-0520703.
XX
PA (UYNE-) UNIV MED NEW JERSEY.
XX
PI Campbell RK, Moyle WR;
XX
DR WPI; 1991-353528/48.
XX
PT New glyco-protein hormone analogues - for inducing fertility as
PT Immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
PS Table VI; Page 65; 94pp; English.
XX
CC The sequence is an analogue of mature hCG beta subunit having
CC residues 77, 82, 83, 89, 92, 93, 99, 113 and 115-122 replaced by the
CC corresponding residues in the human LH protein and residues 123-145
CC deleted. The chimeric hormone may be useful in the treatment of
CC infertility in men and women and the promotion of fertility in male
CC and female animals.
XX
See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
SQ Sequence 122 AA;
Query Match 75.88; Score 589; DB 12; Length 122;
Best Local Similarity 93.01; Pred. No. 3.9e-46;
Matches 106; Conservative 3; Mismatches 5; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 61
   |||||
Db 1 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 60

```

```

QY 62 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 115
   |||||
Db 61 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 114

RESULT 169
AAR15081
ID AAR15081 standard; Protein: 115 AA.
XX
AC AAR15081;
XX
DT 11-FEB-1992 (first entry)
XX
DE hCG/hFSH chimera, B21.
XX
KW Glycoprotein hormone; fertility; immuno-castration;
KW Immuno-contragestive; vaccine; human chorionic gonadotropin;
KW Folicle stimulating hormone; FSH; CG.
XX
OS Homo sapiens.
XX
PN WO9116922-A.
XX
PD 14-NOV-1991.
XX
PF 07-MAY-1991; 91WO-US03162.
XX
PR 08-MAY-1990; 90US-0520703.
XX
PA (UYNE-) UNIV MED NEW JERSEY.
XX
PI Campbell RK, Moyle WR;
XX
DR WPI; 1991-353528/48.
XX
PT New glyco-protein hormone analogues - for inducing fertility as
PT Immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
PS Table II; Page 61; 94pp; English.
XX
CC The sequence is an analogue of mature hCG beta subunit comprising
CC residues 1-115 of hCG beta having residues 102-104, and 112-115
CC replaced by the corresponding residues in the hFSH protein. The
CC chimeric hormone is capable of directing hormone binding to both LH
CC and FSH receptors and may be useful for the treatment of infertility
CC in men and women and the promotion of fertility in male and female
CC animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).
XX
SQ Sequence 115 AA;
Query Match 75.48; Score 586; DB 12; Length 115;
Best Local Similarity 96.48; Pred. No. 6.9e-46;
Matches 107; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 61
   |||||
Db 1 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTVRVLOGLPALPQVNCYR 60

QY 62 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 112
   |||||
Db 61 DVRFESIRLPGCPGVNPVSVYAVALSOCALCRSTTDCGPKDHPDPTCD 111

RESULT 170
AAU04609
ID AAU04609 standard; Protein: 234 AA.
XX
AC AAU04609;
XX
DT 23-OCT-2001 (first entry)
XX

```

Db	141	GSAP	144
RESULT	171		
ID	AAE04481	standard; Protein: 234	AA.
XX	AAE04481:		
XX	04-SEP-2001	(first entry)	
XX	Human single chain gonadotropin analog no.8.		
DE	human; single chain gonadotropin analog no.8; anti-infertility; drug;		
DE	peptide therapy; luteinising hormone; LH; follicle stimulating hormone;		
KW	FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;		
KW	glycoprotein; infertility; fusion protein.		
XX	Homo sapiens.		
OS	Synthetic.		
XX	Key	Location/Qualifiers	
FX	Region	212:234 "Corresponds to 1-100 amino acids of human chorionic gonadotropin (CG) beta-subunit"	
FT	Region	121..129	
FT	Region	/note- "Corresponds to 95-103 amino acids of human follicle stimulating hormone (FSH) beta-subunit"	
FT	Region	131..134	
FT	Region	/note- "DDPR peptide"	
FT	Region	135..142	
FT	Region	/note- "Linker peptide"	
FT	Region	143:234 "Corresponds to 1-92 amino acids of human single chain gonadotropin alpha-subunit"	
XX	US6238890-B1.		
XX	29-MAY-2001.		
XX	25-AUG-1997;	97US-0918288.	
XX	18-FEB-1994;	94US-0189382.	
PR	22-SEP-1994;	94US-0310544;	
PR	27-SEP-1994;	94US-0310590.	
PR	04-NOV-1994;	94US-0334628.	
PR	07-DEC-1994;	94US-0351591.	
PR	07-JUN-1995;	95US-0475049.	
PR	09-MAY-1997;	97US-0853524.	
XX	(UNIW) UNIV WASHINGTON.		
XX	Boime I, Moyle WR;		
XX	WPI: 2001-356474/38.		
DR	N-PSDB; AAD08799.		
XX	New DNA or RNA encoding single chain protein useful in treating infertility, as aids in vitro fertilization techniques, or other therapeutic methods associated with the native hormones		
PT	Claim 9; Fig 12; 87pp; English.		
XX	The invention relates to human single chain forms of the glycoprotein hormone quartet which is an agonist or antagonist of luteinising hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers having identical alpha subunits and differing beta subunits. The agonist form of single chain hormones are used in treating infertility, as aids in vitro fertilization techniques, or other therapeutic methods associated with the native hormones. The single chain hormones are useful as reagents in a manner similar to heterodimers, as diagnostic tools to		

Db	141	GSAP	144
RESULT	171		
ID	AAE04481	standard; Protein: 234	AA.
XX	AAE04481:		
XX	04-SEP-2001	(first entry)	
XX	Human single chain gonadotropin analog no.8.		
DE	human; single chain gonadotropin analog no.8; anti-infertility; drug;		
DE	peptide therapy; luteinising hormone; LH; follicle stimulating hormone;		
KW	FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;		
KW	glycoprotein; infertility; fusion protein.		
XX	Homo sapiens.		
OS	Synthetic.		
XX	Key	Location/Qualifiers	
XX	Region	212: "Corresponds to 1-100 amino acids of human	
FT	FT	chorionic gonadotropin (CG) beta-subunit"	
FT	Region	121..129	
FT	FT	/note- "Corresponds to 95-103 amino acids of human	
FT	FT	follicle stimulating hormone (FSH) beta-subunit"	
FT	Region	131..134	
FT	FT	/note- "DDPR peptide"	
FT	Region	135..142	
FT	Region	/note- "Linker peptide"	
FT	Region	143..234	
FT	FT	"Corresponds to 1-92 amino acids of human single	
FT	FT	chain gonadotropin alpha-subunit"	
PN	US6238890-B1.		
XX	29-MAY-2001.		
XX	25-AUG-1997;	97US-0918288.	
XX	18-FEB-1994;	94US-0189382.	
PR	27-SEP-1994;	94US-0189384;	
PR	27-SEP-1994;	94US-0310590.	
PR	04-NOV-1994;	94US-0334628.	
PR	07-DEC-1994;	94US-0351591.	
PR	07-JUN-1995;	95US-0475049.	
PR	09-MAY-1997;	97US-0853524.	
XX	(UNIW) UNIV WASHINGTON.		
XX	Boime I, Moyle WR;		
XX	WPI: 2001-356474/38.		
DR	N-PSDB; AAD08799.		
XX	New DNA or RNA encoding single chain protein useful in treating		
PT	infertility, as aids in vitro fertilization techniques, or other		
PT	therapeutic methods associated with the native hormones		
XX	Claim 9; Fig 12; 87pp; English.		
XX	The invention relates to human single chain forms of the glycoprotein		
CC	hormone quartet which is an agonist or antagonist of luteinising hormone		
CC	(LH), follicle stimulating hormone (FSH), thyroid stimulating hormone		
CC	(TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers		
CC	having identical alpha subunits and differing beta subunits. The agonist		
CC	form of single chain hormones are used in treating infertility, as aids		
CC	in vitro fertilization techniques, or other therapeutic methods associ-		
CC	ated with the native hormones. The single chain hormones are useful		
CC	as reagents in a manner similar to heterodimers, as diagnostic tools to		

CC detect the presence of antibodies with respect to the native proteins in
 CC biological samples, as control reagents in assay kits for assessing the
 CC levels of these hormones in various samples, in detecting and purifying
 CC receptors to which the native hormones bind. The single chain hormones
 CC are also used in affinity chromatographic preparation of receptors or
 CC anti-hormone antibodies. They are used as purification tools for monitor
 CC and hormone antibodies. Preparation of these materials and to monitor
 CC levels of single chain hormones and antibodies. The single chain
 CC glycoproteins are used to generate antibodies specifically immunoreactive
 CC with these new compounds, as substitutes for the heterodimeric forms of
 CC hormones. The present sequence is human single chain gonadotropin
 CC analog no:8 related to the invention. Analog no:8 is a fusion protein
 CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-100 amino
 CC acids), follicle stimulating hormone (FSH) beta-subunit (95-103 amino
 CC acids) and Dppr peptide fused to human single chain gonadotropin alpha-
 CC subunit (1-92 amino acids) by a linker sequence. This analog serves as a
 CC useful starting compound for template directed vaccine design and for the
 CC development of hormone-specific vaccines for use in humans.
 XX Sequence 234 AA:

Query Match 74.9%; Score 582; DB 22; Length 234;
 Best Local Similarity 88.7%; Pred. No. 3.3e-45;
 Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQLGVLPAIPQVVCNTR 61
 DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQLGVLPAIPQVVCNTR 80
 QY 62 DVFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGGPKDHPKIDCD 121
 DB 81 DVFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGGPKDHPKIDCD 140
 QY 122 SKAP 125
 DB 141 GSAP 144

RESULT 172
 AAR15083
 ID AAR15083 standard; Protein: 115 AA.
 AC AAR15083;
 DT 11-FEB-1992 (first entry)
 DE hCG/hFSH chimera, B23.
 KW Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 OS Homo sapiens.
 PN WO9116922-A.
 PD 14-NOV-1991.
 PF 07-MAY-1991; 91WO-US03162.
 PR 08-MAY-1990; 90US-0520703.
 PA (UTNE-) UNIV MED NEW JERSEY.
 PI Campbell RK, Moyle WR;
 XX WPI: 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 XX immuno-castration agents, for suppressing reproductive system
 XX development and as immuno-contragestive vaccines.
 PS Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit comprising
 CC residues 1-115 of hCG beta having residues 105-107, 109, 110 and
 CC 112-115 replaced by the corresponding residues in the hFSH protein.
 CC The chimeric hormone is capable of directing hormone binding to both
 CC LH and FSH receptors and may be useful for the treatment of infertility
 CC in men and women and the treatment of fertility in female
 CC animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).
 XX Sequence 115 AA:

Query Match 73.7%; Score 573; DB 12; Length 115;
 Best Local Similarity 95.5%; Pred. No. 1e-44;
 Matches 106; Conservative 1; Mismatches 4; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQLGVLPAIPQVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQLGVLPAIPQVVCNTR 60
 QY 62 DVFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGGPKDHPKIDCD 112
 DB 61 DVFESIRLPGCPGVNPNVSYVALSCCALCRSTTDCGGPKDHPKIDCD 111

RESULT 173
 AAR86254
 ID AAR86254 standard; Protein: 234 AA.
 AC AAR86254;
 DT 29-APR-1996 (first entry)
 DE Single chain gonadotropin analogue 8.
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;
 KW inhibit; stimulate; increase; lutropin; luteinising hormone; LH;
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.
 XX Synthetic.
 PN Key Location/Qualifiers
 PH Peptide 1..20
 FT /label= leader
 FT Region 21..120
 FT /label= hCG_beta_subunit_(1-100)
 FT Misc-difference 70
 FT /note= *Arg corresponds to CCG codon*
 FT Region 121..129
 FT /label= hFSH_beta_subunit_(95-103)
 FT /note= Immediately followed by a Cys residue
 FT (hFSH beta subunit amino acid 104).
 FT Region 131..134
 FT /label= DDPK
 FT Region 135..142
 FT /label= linker
 FT Region 143..234
 FT /label= Gonadotropin_alpha_subunit_(1-92)
 PN WO9522340-A1.
 PD 24-AUG-1995.
 XX 17-FEB-1995; 95WO-US02067.
 PR 18-FEB-1994; 94US-0199382.
 PA (SENS-) SENSITEST.
 PI Moyle WR;
 XX WPI: 1995-302553/39.
 XX N-FSDB; AAT03233.
 DR

XX Methods for altering fertility in mammals, esp. humans - e.g.
 PT stimulating fertility by reducing the activity and/or levels of
 PT circulating glyco:protein hormones having lutropin activity
 XX
 XX Example 19 and Claim 39; Fig 13; 102pp; English.
 XX
 CC Analogue 8 (hCG-beta(11-100)-hFSH-beta(95-103)-Dppr-linker-human
 CC alpha(1-92)) is a specific example of a single chain gonadotropin
 CC having a chorionic gonadotropin (CG) beta subunit at the N-terminus
 CC and a CG alpha subunit at the C-terminus, joined by a linker of 1-16
 CC amino acids. The analogue has follicle stimulating hormone
 CC (folitropin) and luteinising hormone (lutropin) activity but is
 CC structurally more similar to hCG than to hFSH. The analogue is useful
 CC for inducing follicle development and increasing male fertility.
 XX
 XX Sequence 234 AA:
 SQ Query Match 73.7%; Score 573; DP 16; Length 234;
 Best Local Similarity 87.9%; Pred. No. 2,1e-44;
 Matches 109; Conservative 0; Mismatches 15; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTPTTRVLQGVLPALPOVVCNVR 61
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTPTTRVLQGVLPALPOVVCNVR 80
 QY 62 DVRFESTRLPGCPGVNVPVYVAVALSCCALCRSTTDCGGPKDHPHLC 121
 DB 81 DVRFESTRLPGCPGVNVPVYVAVALSCCALCRSTTDCGGPKDHPHLC 140
 QY 122 SKAP 125
 DB 141 GSAP 144
 RESULT 174
 AAR31005
 XX AAR31005 standard; protein: 114 AA.
 XX
 AC AAR31005;
 XX
 DT 14-MAY-1993 (first entry)
 XX
 DE Modified hCG beta subunit - analogue "Q".
 XX
 KW hCG; glycoprotein hormone analogue; human infertility; LH; FSH;
 KW luteinising hormone receptor; follicle stimulating hormone receptor;
 KW vertebrate; polycystic ovarian disease.
 XX
 OS Homo sapiens.
 XX
 FH Key Location/Qualifiers
 FT Region 94..97 /note= "non-hCG derived residues"
 FT Region 108..114 /note= "non-hCG derived residues"
 FT Region 94..97 /note= "D region - LH binding and specificity"
 FT Region 100..106 /note= "G region - FSH binding and specificity"
 FT Region 109..114 /note= "D region - LH binding and specificity"
 FT Region 110..114 /note= "G region - FSH binding and specificity"
 XX
 PN WO922568-A.
 XX
 PD 23-DEC-1992.
 XX
 PF 18-JUN-1992; 92WO-US05207.
 XX
 PR 18-JUN-1991; 91US-0717151.
 XX
 XX (UYNE-) UNIV NEW JERSEY.
 XX
 PI Campbell RK, Moyle WF.
 XX

DR WPI; 1993-018070/02.
 XX New alpha, beta-heterodimeric polypeptide derivs. - which bind to
 PT luteinising and follicle stimulating hormone receptors, useful for
 PT controlling the ratio of FSH to LH activity
 XX
 XX Disclosure; Page 21; 98pp; English.
 XX
 CC The sequence is that of a modified form of human chorionic gonadotropin
 CC (hCG), analogue "Q", in which amino acids in the "D" and/or "G" regions
 CC have been substituted resulting in changes in the binding specificity
 CC and avidity of luteinising hormone (LH) and follicle stimulating
 CC hormone (FSH) receptor. It is used in the prepn. of an alpha,
 CC beta-heterodimeric polypeptide having an affinity to vertebrate LH
 CC and FSH receptors. Such an analogue can be prepared having a desired
 CC ratio of FSH:LH activity. The polypeptide may be used for treating
 CC human infertility or polycystic ovarian disease.
 XX
 XX Sequence 114 AA:
 SQ Query Match 73.2%; Score 569; DP 14; Length 114;
 Best Local Similarity 93.6%; Pred. No. 2.4e-44;
 Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTPTTRVLQGVLPALPOVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTPTTRVLQGVLPALPOVVCNVR 60
 QY 62 DVRFESTRLPGCPGVNVPVYVAVALSCCALCRSTTDCGGPKDHPHLC 111
 DB 61 DVRFESTRLPGCPGVNVPVYVAVALSCCALCRSTTDCGGPKDHPHLC 110
 RESULT 175
 AAR8922
 ID AAR8922 standard; protein: 114 AA.
 XX
 AC AAR8922;
 XX
 DT 13-JUL-1996 (first entry)
 XX
 DE HCG analogue-Q beta-subunit.
 XX
 KW HCG; human; chorionic gonadotropin; beta-subunit; heterodimer;
 KW alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;
 KW D-region; G-region; protein engineering; fertility; hormone;
 KW follicle stimulating hormone; luteinising hormone; TSH;
 KW ovulation; spermatogenesis.
 XX
 OS Homo sapiens.
 XX
 FH Key Location/Qualifiers
 FT Region 1..93 /note= "HCG sequence"
 FT Region 94..97 /note= "FSH D-region"
 FT Region 98..107 /note= "HCG G-region fragment"
 FT Region 108..109 /note= "FSH G-region fragment"
 FT Region 110..114 /note= "FSH sequence"
 FT Region 111..114 /note= "FSH sequence"
 XX
 PN US5508261-A.
 XX
 PD 16-APR-1996.
 XX
 PF 18-JUN-1991; 91US-0717151.
 XX
 XX 21-JAN-1994; 94US-0184408.
 PR 18-JUN-1991; 91US-0717151.
 PR 18-AUG-1993; 93US-0108845.
 PR 18-APR-1995; 95US-0425673.

XX PA (UYME-) UNIV NEW JERSEY.

XX PI Campbell RK, Han Y, Macdonald GJ, Moyle WR, Wang Y;

XX XX MPI; 1996-208744/21.

XX PT New alpha, beta-heterodimeric glyco-protein hormone polypeptide(s)

XX PT - having a non-naturally occurring beta subunit derived from hCG,

XX PT LH, FSH and TSH

XX PS Example 1; Column 11-12: 27pp; English.

XX CC The sequence is an example of a glycoprotein hormone beta-chain

XX CC analogue used to construct an alpha,beta-heterodimer polypeptide

XX CC with altered binding affinity to LH receptor and FSH receptor. The

XX CC heterodimer preferably contains an hCG alpha-subunit and a chimeric

XX CC beta-subunit containing hCG, LH, FSH and/or thyrotropin residues.

XX CC Binding specificity may be altered without disrupting the region of

XX CC heterodimer important for LH receptor binding, and the G-region is

XX CC hCG is most important for LH receptor binding, and the G-region is

XX CC most important for FSH binding. Analogue-Q, with an FSH D-region

XX CC and 6 critical residues of the G-region, binds to both FSH receptor

XX CC and LH receptor. A cDNA for analogue-Q may be expressed in a

XX CC COS-7 cell culture. This type of hormone analogue may be useful

XX CC clinically for induction of ovulation in women with polycystic ovary

XX CC disease, or to increase spermatogenesis in azospermic males who have

XX CC some circulating LH.

XX CC Sequence 114 AA;

XX SQ

Query Match 73.2%; Score 569; DB 17; Length 114;

Best Local Similarity 93.6%; Pred. No. 2.4e-44;

Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTNTTICAGYCPMTVRVLQGVLPALPOVWYR 61

DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTNTTICAGYCPMTVRVLQGVLPALPOVWYR 60

QY 62 DVFEESIRLPGCPGVNPNVYNAVALSCQALCHRTDTCGGPKDHLTC 111

DB 61 DVFEESIRLPGCPGVNPNVYNAVALSCQALCHRTDTCGGPKDHLTC 110

RESULT 176

AAE04515

ID AAE04515 standard; Protein; 234 AA.

XX AC AAE04515;

XX DE 04-SEP-2001 (first entry)

XX DE human single chain gonadotropin analog no:8a.

XX KW human; single chain gonadotropin analog no:8a; anti-infertility; drug;

XX KW peptide therapy; luteinising hormone; LH; follicle stimulating hormone;

XX KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;

XX KW glycoprotein; infertility; fusion protein; mutant; mutein.

XX OS Homo sapiens.

XX OS Synthetic.

XX DE Key

XX DE Location/Qualifiers

XX DE 21..120

XX DE /note- "Corresponds to 1-100 amino acids of human

XX DE chorionic gonadotropin (CG) beta-subunit"

XX DE Misc-difference 33

XX DE /note- "Wild type Asn substituted with Xaa, Where Xaa

XX DE refers to Gln or other amino acid"

XX DE Misc-difference 50

XX DE /note- "Wild type Asn substituted with Xaa, Where Xaa

XX DE refers to Gln or other amino acid"

XX DE 121..129

XX DE Region

FT /note- "Corresponds to 95-103 amino acids of human

FT follicle stimulating hormone (FSH) beta-subunit"

FT 131..134

FT /note- "DDPR peptide"

FT 135..142

FT /note- "Linker peptide"

FT 143..224

FT /note- "Corresponds to 1-92 amino acids of human single

FT chain gonadotropin alpha-subunit"

FT Misc-difference 19

FT /note- "Wild type Asn substituted with Xaa, Where Xaa

FT refers to Gln or other amino acid"

FT 220

FT /note- "Wild type Asn substituted with Xaa, Where Xaa

FT refers to Gln or other amino acid"

XX US6238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 97US-0918288.

XX 18-FEB-1994; 94US-0199382.

XX 12-AUG-1994; 94US-0289396.

XX 22-SEP-1994; 94US-0310590.

XX 04-NOV-1994; 94US-0334628.

XX 07-DEC-1994; 94US-0351591.

XX 07-JUN-1995; 95US-0475049.

XX 09-MAY-1997; 97US-0853524.

XX (UNITM) UNIV WASHINGTON.

XX Boime I, Moyle WR;

XX MPI; 2001-366474/38.

XX New DNA or RNA encoding single chain protein useful in treating

XX infertility, as aids in vitro fertilization techniques, or other

XX therapeutic methods associated with the native hormones

XX Claim 9; Column -: 87pp; English.

XX The invention relates to human single chain forms of the glycoprotein

XX hormone quartet which is an agonist or antagonist of luteinising hormone

XX (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone

XX (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers

XX having identical alpha subunits and differing beta subunits. The agonist

XX forms of single chain hormones are used in treating infertility, as aids

XX in vitro fertilisation techniques, and other therapeutic methods

XX associated with the native hormones. The single chain hormones are useful

XX as reagents in a manner similar to heterodimers, as diagnostic tools to

XX detect the presence of antibodies with respect to the native proteins in

XX blood samples, as aids in detecting and purifying

XX levels of these hormones in various samples, in detecting and purifying

XX receptors to which the native hormones bind. The single chain hormones

XX are also used in affinity chromatographic preparation of receptors or

XX antihormone antibodies. They are used as purification tools for

XX isolation of subsequent preparations of these materials and to monitor

XX levels of single chain hormones administered as drugs. The single chain

XX glycoproteins are used to generate antibodies specifically immunoreactive

XX with these new compounds, as substitutes for the heterodimeric forms of

XX hormones. The present sequence is human single chain gonadotropin

XX analog no:8a related to the invention. Analog no:8a is a fusion protein

XX consisting of a single chain gonadotropin (CG) subunit (95-103 amino

XX acids) and DDPR peptide fused to human single chain gonadotropin alpha-

XX subunit (1-92 amino acids) by a linker sequence. This analog serves as a

XX useful starting compound for template directed vaccine design and for the

XX development of hormone-specific vaccines for use in humans.

XX Note: The present sequence is not shown in the specification, but is

XX derived from the human single chain gonadotropin analog no:8 shown

XX as SEQ ID NO: 24, in figure 12 of the specification (AAE04481).

Seq	Sequence	114 AA:
	Query Match	72.2%; Score 561; DB 14; Length 114;
	Best Local Similarity	92.18; Pred. No. 1.3e-43;
	Matches 105; Conservative	0; Mismatches 9; Indels 0; Gaps 0;
QY	2 SKEPRLPRCPINATLAVEKEGPGVCITVNTTICAGTCPTNTRVLQGVLPALPQPVCMNR 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |	
DB	1 SKEPRLPRCPINATLAVEKEGPGVCITVNTTICAGTCPTNTRVLQGVLPALPQPVCMNR 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |	
QY	62 DVVFSTELGGPCRNVPVSYNAVALSCQCALCRSTFTDGGPKDHPIQQDDPR 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |	
DB	61 DVVFSTELGGPCRNVPVSYNAVALSCQCALCRSTTDTCTVRGLGSVCDPR 114 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |	
RESULT 178		
ID	ID AAR88920 standard; protein; 114 AA.	
XX	AAR88920;	
AC	12-JUL-1996 (first entry)	
CA	HCG analogue-G beta-subunit.	
DA		
DE	HCG; human; chorionic gonadotropin; beta-subunit; heterodimer:	
EE	alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;	
KK	D-region; G-region; protein engineering: fertility; hormone;	
KW	follicle stimulating hormone; luteinising hormone; TSH;	
KX	ovulation; spermatogenesis.	
NW	Homo sapiens.	
OS		
SS	Key Location/Qualifiers	
FH	Region 1..100	
FF	/note= "HCG sequence"	
FT	Region 94..100	
FT	/note= "HCG D-region"	
FT	Peptide 95..114	
FT	Fragment encoded by oligonucleotide AAT12942*	
FT	Region 101..109	
FT	/note= "Human FSH G-region"	
FT	Region 110..114	
FT	/note= "HCG sequence"	
PN	US5508261-A.	
PP	16-APR-1996.	
PD	18-JUN-1991; 91US-0717151.	
XX	21-JAN-1994; 94US-0184408.	
XX	18-JUN-1991; 91US-0717151.	
PP	18-AUG-1993; 93US-0108845.	
PP	18-APR-1995; 95US-0425673.	
XX	(UYNE-) UNIV NEW JERSEY.	
EPA	Campbell RK, Han Y, Macdonald GJ, Moyle WR, Wang Y;	
FI	WT: 1996-208744/21.	
XX	New alpha, beta-hetero:dimeric glyco:protein hormone polypeptide(s)	
PPT	- having a non-naturally occurring beta-subunit derived from HCG,	
PPT	LH, FSH and TSH	
XX	Example 1; Column 11-12; 27pp; English.	
XX	The sequence is an example of a glycoprotein hormone beta-chain	
CC	with reduced immunoreactivity to LH receptor and FSH receptor.	
CC	with altered binding affinity to LH receptor and FSH receptors. The	
CC	heterodimer preferably contains an HCG alpha-subunit and a chimeric	
CC	beta-subunit containing HCG, LH, FSH and/or thyrotropin residues.	

CC Binding activity and specificity may be altered without disrupting
 CC heterodimer formation or reaction with antibodies. The D-region of
 CC HCG is most important for LH receptor binding, and the G-region is
 CC most important for FSH binding. Analogue-G, with an HCG D-region
 CC and an FSH G-region, has high affinity to both LH and FSH
 CC receptors. A cDNA for analogue-GT (AAR8624) is digested with BglII
 CC and SstI, and ligated with oligonucleotide AAT1942, followed by
 CC expression in Escherichia coli BHS alpha and COS-7 cell culture.
 CC An analogue with location of induction of ovulation in women with polycystic
 CC ovary disease, or to increase spermatogenesis in azospermic males
 CC who have some circulating LH.
 CC
 XX Sequence 114 AA;

Query Match 72.2%; Score 561; DB 17; Length 114;
 Best Local Similarity 92.1%; Pred. No. 1.3e-43;
 Matches 105; Conservative 0; Mismatches 9; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 60
 QY 62 DVRESIRLPGCPGVNPNVSTAVALSQCACLCRSTTDCGPKDHPITCDPRPQSSS 115
 DB 61 DVRESIRLPGCPGVNPNVSTAVALSQCACLCRSTTDCGPKDHPITCDPRPQSSS 114

RESULT 179

AAR86266 standard; Protein: 234 AA.

AC AAR86266;

DT 08-MAY-1996 (first entry)

DE Partially deglycosylated single chain gonadotropin analogue 8a.
 XX Single chain gonadotropin; human chorionic gonadotropin; hCG;
 XX alpha; beta; subunit; analogue; glycoprotein hormone; fertility;
 KW inhibit; stimulate; increase; luteinising hormone; LH;
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.
 XX Synthetic.

XX Key Location/Qualifiers

FT Peptide 1..20

FT Region 21..120

FT Misc-difference 3; /label= HCG_beta_subunit_(1-100)

FT /note= "wild-type Asn at position 13 of the beta-
 subunit is pref. replaced by another amino
 acid (esp. Gln) to remove a glycosylation
 site"

FT Misc-difference 50

FT /note= "wild-type Asn at position 30 of the beta-
 subunit is pref. replaced by another amino
 acid (esp. Gln) to remove a glycosylation
 site"

FT Misc-difference 70

FT Region 71..129; /note= "Arg corresponds to CCG codon"

FT /label= hFSH_beta_subunit_(95-103)

FT /note= "immediately followed by Cys residue
 131..134 (hFSH beta subunit amino acid 104)";

FT Region 131..134; /label= DDPR

FT Region 135..142; /label= linker

FT Region 143..234

FT /label= Gonadotropin_alpha_subunit_(1-92)

FT Misc-difference 194

FT /note= "wild-type Asn at position 52 of the alpha-
 subunit is pref. replaced by another amino
 acid (esp. Gln) to remove a glycosylation
 site"

FT Misc-difference 220

FT /note= "wild-type Asn at position 78 of the alpha-
 subunit is pref. replaced by another amino
 acid (esp. Gln) to remove a glycosylation
 site"

PN W09522340-A1.

XX 24-AUG-1995.

XX 17-FEB-1995; 95WO-US02067.

XX 18-FEB-1994; 94US-0199382.

XX (SENS-) SENS1-TEST.

XX Moyle WR;

XX WPI: 1995-302553/39.

XX Methods for altering fertility in mammals, esp. humans - e.g.
 PT stimulating fertility by reducing the activity and/or levels of
 PT circulating glyco:protein hormones having lutropin activity

XX Example 24; Fig 13 and Page 60; 102pp; English.

XX The single-chain gonadotropin analogue 8a (hCG-beta(1-100)(N13X,N30X))-
 CC hFSH-beta(95-103)-DDPR-linker-human CG-alpha(1-92)(N52X,N78X1)
 CC can be derived from analogue 8 by removing at least one of the four
 CC glycosylation sites. The partially deglycosylated analogue has anti-
 CC follicle stimulating hormone (folliotropin) and anti-luteinising
 CC hormone (lutropin) activity and is useful for treating ovarian
 CC hyperstimulation and reducing spermatogenesis.

XX Sequence 234 AA:

Query Watch 71.9%; Score 559; DB 16; Length 234;
 Best Local Similarity 86.3%; Pred. No. 4e-43;
 Matches 107; Conservative 0; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 61

DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 80

QY 62 DVRESIRLPGCPGVNPNVSTAVALSQCACLCRSTTDCGPKDHPITCDPRPQSSS 121

DB 81 DVRESIRLPGCPGVNPNVSTAVALSQCACLCRSTTDCGPKDHPITCDPRPQSSS 140

QY 122 SKAP 125

DB 141 GSAP 144

RESULT 180

AAR86249

ID AAR86249 standard; Protein: 234 AA.

XX AAR86249;

XX 25-APR-1996 (first entry)

XX Single chain gonadotropin analogue 3.

KW Single chain gonadotropin; human chorionic gonadotropin; hCG;

KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;

KW inhibit; stimulate; increase; luteinising hormone; LH;

KW follicle stimulating hormone; FSH; vaccine; contraceptive.

XX Synthetic.

```

XX FH Key Location/Qualifiers
XX PT Peptide 1..20
XX FT Region /label= leader
XX FT Region 21..134
XX FT Region /label= hhd_beta_subunit_(1-114)
XX FT Region 135..142
XX FT Region /label= linker
XX FT Region 143..324
XX FT Region /label= Gonadotropin_alpha_subunit_(1-92)
XX PN W09522340-A1.
XX PD 24-AUG-1995.
XX PF 17-FEB-1995; 95WO-US02067.
XX PR 18-FEB-1994; 94US-0199382.
XX RA (SENS-) SENS1-TEST.
XX PA Moyle WR.
XX PI
XX DR WPI: 1995-302553/39.
XX DR N-PSDB: AAT03221.
XX PT Methods for altering fertility in mammals, esp. humans - e.g.
XX PT stimulating fertility by reducing the activity and/or levels of
XX PT circulating glycoprotein hormones having lutein activity
XX PS Example 14; Fig 8: 102pp; English.
XX CC Analogue 3 (human LH-beta(1-114)-linker-human-alpha(1-92)) is a
XX CC specific example of a single chain gonadotropin; chimeric proteins
XX CC having a chorionic gonadotropin (CG) beta-subunit at the N-terminus
XX CC and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16
XX CC amino acids are claimed. The analogue has luteinising hormone
XX CC (lutropin) activity and is useful for inducing ovulation and
XX CC increasing male fertility.
XX SQ Sequence 234 AA;

Query Match 71.9%; Score 559; DB 16; Length 234;
Best Local Similarity 81.5%; Pred. No. 4e-43;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTPTTRVLQGVLPALPQVYCNTR 61
DB 21 SREPLRPMCHPINAIIAVEKEGCPVCITVNTTICAGYCTPTTRVLQGVLPALPQVYCTR 80
QY 62 DVRESIELPCGPGVNPVSYVALSCGALCRSTTCGCGKHPLTCDPRPDQSSS 121
DB 81 DVRESIELPCGPGVNPVSYVALSCGALCRSTTCGCGKHPLTCDPRPDQSSS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 181
ID AAU04604 standard; Protein: 234 AA.
AC AAU04604;
XX 23-OCT-2001 (first entry)
XX Single chain gonadotropin analogue #3.
XX Ruman; glycoprotein hormone; infertility; in vivo fertilisation;
XX single chain gonadotropin.
XX Homo sapiens.

```

```

XX PN US6242580-B1.
XX PD 05-JUN-2001.
XX PF 31-MAR-1999; 99US-0282357.
XX PR 25-AUG-1997; 97US-0918288.
XX PR 18-FEB-1994; 94US-0199382.
XX PR 22-SEP-1994; 94US-0289596.
XX PR 04-NOV-1994; 94US-0314628.
XX PR 07-DEC-1994; 94US-0351591.
XX PR 07-JUN-1995; 95US-0475049.
XX PR 09-MAY-1997; 97US-0833524.
XX PA (UNIM ) UNIV WASHINGTON.
XX PI
XX DR Boime I, Moyle WR.
XX DR WPI: 2001-424301/45.
XX DR N-PSDB: AAS08489.
XX PT New single chain forms of the glycoprotein hormone quartet useful for
XX PT generating antibodies specifically immunoreactive with the new
XX PT compounds, in treating infertility, or as aids for in vivo
XX PT fertilization techniques.
XX PS Example 7; Fig 7: 86pp; English.
XX CC The sequence represents the amino acid sequence of single chain
XX CC gonadotropin analogue 3. The glycoprotein hormone analogue is
XX CC useful for generating antibodies specifically immunoreactive with the
XX CC compounds, as a substitute for the heterodimeric forms of the hormones
XX CC in the treatment of infertility, as an aid for in vivo fertilisation
XX CC techniques, and in other therapeutic methods associated with the native
XX CC hormone. The single chain protein is further useful as a reagent in a
XX CC manner similar to the heterodimer, as a diagnostic tool to detect the
XX CC presence of antibodies with respect to the native proteins in the
XX CC biological samples, as a control reagent in assay kits for assessing the
XX CC levels of these hormones in various samples, and in detecting and
XX CC purifying these hormones. The single chain protein has the following
XX CC forms of the heterodimers or homodimers have the following advantages
XX CC over their dimeric forms: they are more stable; problems of recombinant
XX CC production are reduced since only a single gene is needed to transcribe,
XX CC translate and process, provide an alternate form thus permitting fine
XX CC tuning of activity levels and of in vivo half lives. Single chain forms
XX CC are unique starting materials for identifying truncated forms with the
XX CC activity of the dimer. The linkage between the subunits permits the
XX CC protein to be engineered without disturbing the overall folding of the
XX CC protein.
XX SQ Sequence 234 AA;

Query Match 71.9%; Score 559; DB 22; Length 234;
Best Local Similarity 81.5%; Pred. No. 4e-43;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTPTTRVLQGVLPALPQVYCNTR 61
DB 21 SREPLRPMCHPINAIIAVEKEGCPVCITVNTTICAGYCTPTTRVLQGVLPALPQVYCTR 80
QY 62 DVRESIELPCGPGVNPVSYVALSCGALCRSTTCGCGKHPLTCDPRPDQSSS 121
DB 81 DVRESIELPCGPGVNPVSYVALSCGALCRSTTCGCGKHPLTCDPRPDQSSS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 182
AAE04476

```

AAE04476 standard; Protein; 234 AA.
 AAE04476;
 04-SEP-2001 (first entry)
 Human single chain gonadotropin analog no:3.
 Human; single chain gonadotropin analog no:3; anti-infertility; drug;
 peptide therapy; luteinising hormone; LH; follicle stimulating hormone;
 FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 glycoprotein; infertility; fusion protein.
 Homo sapiens.
 Synthetic.
 Key Location/Qualifiers
 Region 21-114
 /note- "Corresponds to 1-114 amino acids of human
 luteinising hormone (LH) beta-subunit".
 Region 135..142
 /note- "Linker peptide"
 Region 143..234
 /note- "Corresponds to 1-92 amino acids of human single
 chain gonadotropin alpha-subunit".
 US6238890-B1.
 29-MAY-2001.
 25-AUG-1997; 9705-0918288.
 18-FEB-1994; 9405-0199382.
 12-AUG-1994; 9405-0289396.
 22-SEP-1994; 9405-0310590.
 04-NOV-1994; 9405-0334628.
 07-DEC-1994; 9405-0351591.
 07-JUN-1995; 9505-0475049.
 09-MAY-1997; 9705-085324.
 (UNITW) UNIV WASHINGTON.
 Boime I, Moyle WR;
 WPI; 2001-366474/38.
 N-PSDB; RAD08789.
 New DNA or RNA encoding single chain protein useful in treating
 infertility, as aids in vitro fertilization techniques, or other
 therapeutic methods associated with the native hormones
 Claim 9; Fig 7; 87pp; English.
 The invention relates to human single chain forms of the glycoprotein
 hormone quartet which is an agonist or antagonist of luteinising hormone
 (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
 (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
 having identical alpha subunits and differing beta subunits. The agonist
 forms of single chain hormones are used in treating infertility, as aids
 in vitro fertilisation techniques, and other therapeutic methods
 associated with the native hormones. The single chain hormones are useful
 as reagents in a manner similar to heterodimers, as diagnostic tools to
 detect the presence of antibodies with respect to the native proteins in
 biological samples, as control reagents in assay kits for assessing the
 levels of these hormones in various samples, in detecting and purifying
 receptors to which these hormones bind, and in the preparation of
 receptors to which these hormones bind. The single chain hormones or
 antihormone antibodies. They are used as purification tools for
 isolation of subsequent preparations of these materials and to monitor
 levels of single chain hormones administered as drugs. The single chain
 glycoproteins are used to generate antibodies specifically immunoreactive
 with these new compounds, as substitutes for the heterodimeric forms of
 hormones. The present sequence is human single chain gonadotropin

CC analog no:3 related to the invention. Analog no:3 is a fusion protein
 CC consisting of human luteinising hormone (LH) beta-subunit (1-114 amino
 CC acids) fused to human single chain gonadotropin alpha-subunit (1-92
 CC amino acids) by a linker sequence. This analog serves as a useful
 CC starting compound for template directed vaccine design and for the
 CC development of hormone-specific vaccines for use in humans.
 XX Sequence 234 AA:
 SQ
 Query Match 71.9%; Score 559; DB 22; Length 234;
 Best Local Similarity 81.5%; Pred. No. 4e-43;
 Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVERGCPVCTVTNTICAGTCPTMTYVLCVLPALPQVYCNTR 61
 DB 21 SREPLRPPCHPINAIAVERGCPVCTVTNTICAGTCPTMTYVLCVLPALPQVYCNTR 80
 QY 62 DVRESIRLPCGPGVWVPSYVALSCQALCRSTTCGCGKDPHUTCDPRPDSSS 121
 DB 81 DVRESIRLPCGPGVWVPSYVALSCQALCRSTTCGCGKDPHUTCDPRPDSSS 140
 QY 122 SKAP 125
 DB 141 GSAP 144
 RESULT 183
 AAR15107 standard; Protein; 122 AA.
 XX AAR15107;
 AC AAR15107;
 DT 11-FEB-1992 (first entry)
 DE hCG/BLH chimera, D11.
 KW Glycoprotein hormone; immuno-castration;
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;
 KW luteinising hormone; LH; CG; bovine.
 XX Homo sapiens.
 OS Bos taurus.
 PN WO9116922-A.
 PD 14-NOV-1991.
 PF 07-MAY-1991; 91WO-US03162.
 PR 08-MAY-1990; 90US-0520703.
 XX (UYNE-) UNIV MED NEW JERSEY.
 PI Campbell RK, Moyle WR;
 DR WPI; 1991-353528/48.
 XX New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragestive vaccines.
 XX Table IV; Page 63; 94pp; English.
 CC The sequence is an analogue of mature hCG beta subunit having
 CC several residues replaced by the corresponding residues in the
 CC bovine LH protein and having residues 123-143 deleted. The chimeric
 CC protein is useful in inducing fertility and may have applications as
 CC for binding to the human receptor and may also have applications as
 CC an immunogen, agonist and/or antagonist.
 CC See AAR15043, AAR15061-815125 and AAR15161-815198.
 XX Sequence 122 AA:
 SQ

Query Match 71.6% Score 556.5; DB 12; Length 122;
 Best Local Similarity 83.6%; Pred. No. 3.5e-43;
 Matches 107; Conservative 2; Mismatches 10; Indels 9; Gaps 1;

QY 2 SKEPLRPRCPINATLAVEREGCPVITNTTICAGTCPTMTVRVAGVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVEREGCPVITNTTICAGTCPTMTVRVAGVLPALPQVVCNVR 60
 QY 62 DVRFESIRLPCCPGVNPVSVYVALSCALCRSTTDCGGPKDHPUTCDPRQSSSS 121
 DB 61 DVRFESIRLPCCPGVNPVSVYVALSCALCRSTTDCGGPKDHPUTCDPRQSSSS 114
 QY 122 SKAPPSL 129
 DB 115 ---PLPSI 119

RESULT 184
 AA432799 standard; Protein; 181 AA.
 AC AA432799;
 XX 19-JAN-2000 (first entry)
 XX BLH beta subunit-Jun fusion protein sequence.
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW hypothyroidism disease; hCG; human; chorionic gonadotropin;
 XX beta subunit; therapy; Jun.
 OS Homo sapiens.
 OS Synthetic.
 XX MO9953065-A1.
 XX 21-OCT-1999.
 XX 13-APR-1999; 99NO-US08018.
 XX 14-APR-1998; 98US-0059625.
 XX (UYNE-) UNIV NEW JERSEY.
 XX MOYLE WR;
 XX WPI: 1999-620431/53.
 XX Methods for producing heterodimers, particularly analogues of hormones,
 XX from subunits of cysteine knot proteins -
 XX Example 4; Fig 17; 73pp; English.
 XX This sequence represents a fusion protein of the human leutenizing
 XX hormone (LH) beta subunit and Jun. The invention relates to a
 XX method of forming a cysteine knot protein (I) having alpha and
 XX beta-subunits comprising attaching a dimerisation domain (DD) to either
 XX the N-terminus of both subunits or the N-terminus of the alpha-subunit and
 XX to the C-terminus of the beta-subunit and dimerising the products to form
 XX a heterodimeric protein analog (II). The method is used to produce
 XX analogues (agonists or antagonists) of deglycosylated glycoprotein
 XX hormones, potentially useful, e.g. for treating infertility where caused
 XX by hypothyroidism or an iodine deficiency, or excess release of
 XX leutenizing hormone. The invention relates to DD's derived from a fusion of
 XX immunogens or antigens (since a DD may contain highly antigenic amino
 XX acid sequences). Attachment of a DD (which may be removed later)
 XX facilitates the formation of heterodimers, that have similar structures
 XX (and thus receptor-binding and immunogenic properties) to native dimers,
 XX and allows the combination of subunits that would otherwise combine
 XX poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 XX be modified without loss of activity, and attachment of the DD reduces
 XX formation of homodimers. Heterodimers have longer circulation times in

CC vivo than individual subunits.
 XX SQ Sequence 181 AA;
 Query Match 71.4% Score 555; DB 20; Length 181;
 Best Local Similarity 86.8%; Pred. No. 7.1e-43;
 Matches 99; Conservative 6; Mismatches 9; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEREGCPVITNTTICAGTCPTMTVRVAGVLPALPQVVCNVR 61
 DB 68 SKEPLRPRCPINATLAVEREGCPVITNTTICAGTCPTMTVRVAGVLPALPQVVCNVR 127
 QY 62 DVRFESIRLPCCPGVNPVSVYVALSCALCRSTTDCGGPKDHPUTCDPR 115
 DB 128 DVRFESIRLPCCPGVNPVSVYVALSCALCRSTTDCGGPKDHPUTCDPR 181

RESULT 185
 AA432799 standard; Protein; 234 AA.
 AC AA432799;
 XX 04-SEP-2001 (first entry)
 XX Human single chain gonadotropin analog no:8b.
 XX Human; single chain gonadotropin analog no:8b; anti-infertility; drug;
 KW peptide therapy; leutenizing hormone; LH; follicle stimulating hormone;
 KW thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 KW glycoprotein; infertility; fusion protein; mutant; antigen.
 OS Homo sapiens.
 OS Synthetic.
 XX Key
 XX Region 21..120
 XX Location/Qualifiers
 XX /note= "Corresponds to 1-100 amino acids of human
 XX chorionic gonadotropin (CG) beta-subunit".
 XX Misc-difference 33
 XX /note= "Wild type Asn substituted with Xaa, Where Xaa
 XX refers to Gln or other amino acid".
 XX Misc-difference 50
 XX /note= "Wild type Asn substituted with Xaa, Where Xaa
 XX refers to Gln or other amino acid".
 XX Misc-difference 98
 XX /note= "Wild type Asn substituted with Xaa, Where Xaa
 XX refers to Gln or other amino acid".
 XX Misc-difference 99
 XX /note= "Wild type Val substituted with Thr".
 XX Region 121..129
 XX /note= "Corresponds to 95-103 amino acids of human
 XX follicle stimulating hormone (FSH) beta-subunit".
 XX Region 131..134
 XX /note= "DDPR peptide".
 XX Region 135..142
 XX /note= "Linker peptide".
 XX Region 143..234
 XX /note= "Corresponds to 1-92 amino acids of human single
 XX chain gonadotropin alpha-subunit".
 XX Misc-difference 194
 XX /note= "Wild type Asn substituted with Xaa, Where Xaa
 XX refers to Gln or other amino acid".
 XX Misc-difference 195
 XX /note= "Wild type Asn substituted with Xaa, Where Xaa
 XX refers to Gln or other amino acid".
 XX US6238890-B1.
 XX 29-MAY-2001.
 XX 25-AUG-1997; 97US-0918288.

PR 18-FEB-1994; 94US-0199382.
PR 12-AUG-1994; 94US-0289396.
PR 22-SEP-1994; 94US-0310590.
PR 04-NOV-1994; 94US-0324628.
PR 07-DEC-1994; 94US-0355911.
PR 07-DEC-1994; 95US-0475049.
PR 09-JUN-1995; 95US-0475049.
PR 09-MAY-1997; 97US-0853524.
XX (UNIW) UNIV WASHINGTON.
XX PA
XX BoIme I, Moyle WR;
XX PI
XX DR
XX WPT; 2001-366474/38.
XX
XX New DNA or RNA encoding single chain protein useful in treating
XX PT infertility, as aids in vitro fertilization techniques, or other
XX PT therapeutic methods associated with the native hormones -
XX PI
XX PS
XX Claim 9; Column -; 87pp; English.
XX
XX The invention relates to human single chain forms of the glycoprotein
XX CC hormone quartet which is an agonist or antagonist of luteinizing hormone
XX CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
XX CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
XX CC having identical alpha subunits and differing beta subunits. The agonist
XX CC forms of single chain hormones are used in treating infertility, as aids
XX CC in vitro fertilization techniques, and other therapeutic methods
XX CC associated with the native hormones. The single chain hormones are useful
XX CC associated with the native hormones. The single chain hormones are useful
XX CC to detect the presence of antibodies to heterodimers, as diagnostic tools to
XX CC biological samples, as control reagents in assay kits for assessing the
XX CC levels of these hormones in various samples, in detecting and purifying
XX CC receptors to which the native hormones bind. The single chain hormones
XX CC are also used in affinity chromatographic preparation of receptors or
XX CC antihormone antibodies. They are used as purification tools for
XX CC isolation of subsequent preparations of these materials and to monitor
XX CC levels of single chain hormones administered as drugs. The single chain
XX CC glycoproteins are used to generate antibodies specifically immunoreactive
XX CC with the present sequence as substitutes for the heterodimeric forms of
XX CC hormones. The present sequence is a fusion protein consisting of a single
XX CC analog no:8b related to the invention analog no:8b is a fusion protein
XX CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-100 amino
XX CC acids), follicle stimulating hormone (FSH) beta-subunit (95-103 amino
XX CC acids) and DOPR peptide fused to human single chain gonadotropin alpha-
XX CC subunit (1-92 amino acids) by a linker sequence. This analog serves as a
XX CC useful starting compound for template directed vaccine design and for the
XX CC development of hormone-specific vaccines for use in humans.
XX CC Note: The present sequence is not shown in the specification, but is
XX CC derived from the human single chain gonadotropin analog no:8 shown
XX CC as SEQ ID NO: 24, in figure 12 of the specification (A8E04481).
XX
XX Sequence 234 AA;

Query Match 71.4%; Score 555; DB 22; Length 234;
Best Local Similarity 85.5%; Pred. No. 9,2e-43;
Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;
OY 2 SKEPLRPRCRINATLAVEKEGCPVCTVTTTCAGTCPTMTVRVLOGVLPALPOVYCNVR 61
DB 21 SKEPLRPRCRINATLAVEKEGCPVCTVTTTCAGTCPTMTVRVLOGVLPALPOVYCNVR 80
OY 62 DYRFESIRLPGCRGVNVTYVALSCCALCRSTDCGGPKDHPITCDPRFQSSS 121
DB 81 DYRFESIRLPGCRGVNVTYVALSCCALCRSTDCGGPKDHPITCDPRFQSSS 140
OY 122 SKAP 125
DB 141 GSAP 144

RESULT 186
AA43286
ID AA43286 standard; Protein; 242 AA.

XX AC AA43286;
XX DT 19-JAN-2000 (first entry)
XX DE HLH beta subunit-Jun fusion protein sequence.
XX KE Cysteine knot protein; protein formation: heterodimeric protein analog;
XX KW deglycosylated glycoprotein hormone; infertility; immunogenic antigen,
XX KW polycystic ovarian disease; hCG; human; chorionic gonadotropin,
XX KW beta subunit; therapy; Jun.
XX OS Homo sapiens.
XX OS Synthetic.
XX PN W09953065-A1.
XX PD 21-OCT-1999.
XX PR 13-APR-1999; 99WO-US08018.
XX PR 14-APR-1998; 98US-0059625.
XX PA (UYNE-) UNIV NEW JERSEY.
XX PI Moyle WR;
XX DR WPI; 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
XX PT from subunits of cysteine knot proteins -
XX PS
XX Example 6; Fig 18; 73pp; English.
XX
XX This sequence is a fusion protein of hLH and Jun. The invention
XX CC relates to a method of forming a cysteine knot protein (I) having alpha
XX CC and beta-subunits comprising attaching a dimerization domain (DD) to
XX CC either the N-termini of both subunits or the N-terminus of the
XX CC alpha-subunit and to the C-terminus of the beta-subunit and dimerizing
XX CC the subunits to form a heterodimeric protein analog (II). The method is
XX CC applicable to a wide variety of hormones and antigens. The method is
XX CC where caused by polycystic ovarian disease (associated with excessive
XX CC levels of luteinizing hormone). Products that retain DD's are also useful
XX CC as immunogens or antigens (since a DD may contain highly antigenic
XX CC amino acid sequences). Attachment of a DD (which may be removed later)
XX CC facilitates the formation of heterodimers, that have similar structures
XX CC (and thus receptor-binding and immunogenic properties) to native dimers,
XX CC and allows the combination of subunits that would otherwise combine
XX CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
XX CC be modified without loss of activity, and attachment of the DD reduces
XX CC formation of homodimers. Heterodimers have longer circulation times in
XX CC vivo than individual subunits.
XX
XX Sequence 242 AA;

Query Match 71.4%; Score 555; DB 20; Length 242;
Best Local Similarity 86.8%; Pred. No. 9.5e-43;
Matches 99; Conservative 6; Mismatches 9; Indels 0; Gaps 0;
OY 2 SKEPLRPRCRINATLAVEKEGCPVCTVTTTCAGTCPTMTVRVLOGVLPALPOVYCNVR 61
DB 129 SKEPLRPRCRINATLAVEKEGCPVCTVTTTCAGTCPTMTVRVLOGVLPALPOVYCNVR 188
OY 62 DYRFESIRLPGCRGVNVTYVALSCCALCRSTDCGGPKDHPITCDPR 115
DB 189 DYRFESIRLPGCRGVNVTYVALSCCALCRSTDCGGPKDHPITCDPR 242

RESULT 187
AA43293
ID AA43293 standard; Protein; 242 AA.

AC AAY43293;
 DT 19-JAN-2000 (first entry)
 DE HLH beta subunit-Jun fusion protein sequence.
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;
 XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
 KW polycystic ovarian disease; HCG; human; chorionic gonadotropin;
 KW beta subunit; therapy; Jun.
 XX Homo sapiens.
 OS Synthetic.
 XX W09953065-A1.
 PN 21-OCT-1999.
 PD 13-APR-1999; 99WO-US08018.
 XX 14-APR-1998; 98US-0059625.
 PR (UYNE-) UNIV NEW JERSEY.
 PA Moyle MR.
 PI WPI: 1999-620431/53.
 DR Methods for producing heterodimers, particularly analogues of hormones,
 KW from subunits of cysteine knot proteins.
 PT Example 6: Fig 19; 73pp; English.
 PS This sequence is a fusion protein of HLH and Jun. The invention
 CC relates to a method of forming a cysteine knot protein (I) having alpha
 CC and beta-subunits comprising attaching a dimerisation domain (DD) to
 CC either the N-termini of both subunits or the C-termini of the
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising
 CC the products to form a heterodimeric protein analog (II). The method is
 CC used to produce analogues (agonists or antagonists) of deglycosylated
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility
 CC where used in combination with deglycosylated gonadotropin releasing
 CC hormone (luteinising hormone). Products that retain DP's are also useful
 CC as immunogens or antigens (since a DD may contain highly antigenic
 CC amino acid sequences). Attachment of a DD (which may be removed later)
 CC facilitates the formation of heterodimers, that have similar structures
 CC (and thus receptor-binding and immunogenic properties) to native dimers,
 CC and allows the combination of subunits that would otherwise combine
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
 CC be modified without loss of activity, and attachment of the DD reduces
 CC formation of homodimers. Heterodimers have longer circulation times in
 CC vivo than individual subunits.
 XX Sequence 242 AA:
 SQ
 Query Match 71.44; Score 555; DB 20; Length 242;
 Best Local Similarity 86.84; Pred. No. 9.5e-43;
 Matches 99; Conservative 6; Mismatches 9; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTTCAGYCPMTTRVLOGVLPALPQVVCNTR 61
 Db 129 SREPLRPMCHPCHPNTLAVEKEGCPVCTVNTTTCAGYCPMTTRVLOGVLPALPQVVCNTR 189
 QY 62 DVRESIRLPCGCGVNPVSVYVALSCGALCRSTTDCGCPKHUTCDOR 115
 Db 189 DVRESIRLPCGCGVNPVSVYVALSCGALCRSTTDCGCPKHUTCDOR 242
 RESULT 188
 AAR15070
 ID AAR15070 standard; Protein: 118 AA.
 XX AAR15070;
 AC

XX 11-FEB-1992 (first entry)
 DT HCG/hFSH chimera, B10.
 DE Glycoprotein hormone; fertility; immuno-castration;
 KW immuno-contragative; vaccine; human chorionic gonadotropin;
 KW follicle stimulating hormone; FSH; CG;
 KW Homo sapiens.
 XX W09116922-A.
 PN 14-NOV-1991.
 PD 07-MAY-1991; 91WO-US03162.
 PF 08-MAY-1990; 90US-0520703.
 PR (UYNE-) UNIV MED NEW JERSEY.
 XX Campbell RK. Moyle MR.
 PI WPI: 1991-353528/48.
 DR New glyco-protein hormone analogues - for inducing fertility as
 PT immuno-castration agents, for suppressing reproductive system
 PT development and as immuno-contragative vaccines.
 XX Table II: Page 61; 94pp; English.
 CC The sequence is an analogue comprising amino acids 1-118 of mature
 CC HCG beta subunit having residues 102-107, 109, 110, and 112-118
 CC replaced by the corresponding residues in the hFSH protein. It was
 CC prep'd. by site directed mutagenesis of a cDNA sequence encoding the
 CC HCG beta subunit. The chimeric hormone is capable of directing
 CC hormone binding to both LH and FSH receptors and may be useful for
 CC the treatment of infertility in men and women and the promotion of
 CC fertility in male and female animals. (See AAR15043, AAR15051-RL5125
 CC and AAR15161-RL5196).
 XX Sequence 118 AA:
 SQ
 Query Match 71.24; Score 553; DB 12; Length 118;
 Best Local Similarity 92.84; Pred. No. 6.9e-43;
 Matches 103; Conservative 2; Mismatches 6; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTTCAGYCPMTTRVLOGVLPALPQVVCNTR 61
 Db 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTTCAGYCPMTTRVLOGVLPALPQVVCNTR 60
 QY 63 DVRESIRLPCGCGVNPVSVYVALSCGALCRSTTDCGCPKHUTCDOR 112
 Db 61 DVRESIRLPCGCGVNPVSVYVALSCGALCRSTTDCGCPKHUTCDOR 111
 RESULT 189
 AAU04608
 ID AAU04608 standard; Protein: 234 AA.
 XX AAU04608;
 XX 23-OCT-2001 (first entry)
 DT Single chain gonadotropin analogue #7.
 KW Human; glycoprotein hormone; infertility; in vivo fertilisation;
 KW single chain gonadotropin.
 XX Homo sapiens.
 OS US6247580-B1.
 PN

PD 05-JUN-2001.
 XX 31-MAR-1999; 99US-0282357.
 XX 25-AUG-1997; 97US-0918288.
 PR 18-FEB-1994; 94US-0199382.
 PR 22-SEP-1994; 94US-0289396.
 PR 04-NOV-1994; 94US-0334628.
 PR 07-DEC-1994; 94US-0351591.
 PR 07-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 XX (UNIW) UNIV WASHINGTON.
 PA Boime I, Moyle WR;
 XX WPI; 2001-366474/45.
 DR N-PSDB; AAS08497.
 XX New single chain forms of the glycoprotein hormone quartet useful for
 PT generating antibodies specifically immunoreactive with the new
 PT compounds, in treating infertility, or as aids for in vivo
 PT fertilization techniques
 XX Example 11; Fig 11; 86pp; English.
 PS The sequence represents the amino acid sequence of single chain
 XX gonadotropin subunit 7. The glycoprotein hormone analogues
 CC useful for generating antibodies specifically immunoreactive with new
 CC compounds, as a substitute for the heterodimeric forms of the hormones,
 CC in the treatment of infertility, as an aid for in vivo fertilization,
 CC techniques, and in other therapeutic methods associated with the native
 CC hormone. The single chain protein is further useful as a reagent in a
 CC manner similar to the heterodimer, as a diagnostic tool to detect the
 CC presence of antibodies with respect to the native proteins in the
 CC biological samples, as a control reagent in assay kits for assessing the
 CC levels of these hormones in various samples, and in detecting and
 CC identifying receptors to which the native hormones bind. The single chain
 CC form of the dimeric hormone has the advantages of the heterodimeric
 CC over their dimeric forms: they are more stable, problems of
 CC production are reduced since only a single gene is needed to transcribe,
 CC translate and process, provide an alternate form thus permitting fine
 CC tuning of activity levels and of in vivo half lives. Single chain forms
 CC are unique starting materials for identifying truncated forms with the
 CC activity of the dimer. The linkage between the subunits permits the
 CC protein to be engineered without disturbing the overall folding of the
 CC protein.
 XX Sequence 234 AA;
 XX Query Match 71.23; Score 553; DB 22; Length 234;
 XX Best Local Similarity 85.58; Pred No. 1,4e-42;
 XX Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;
 OY 2 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPVQVYNR 61
 DB 21 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPVQVYNR 80
 OY 62 DYRFESTRLPGCPGVNPNVSVYVALSCCALCRSTTDCGPGKHPLTCDPRPDSSS 121
 DB 81 DYRFESTRLPGCPGVNPNVSVYVALSCCALCRSTTDCGPGKHPLTCDPRPDSSS 140
 OY 122 SKAP 125
 DB 141 GSAP 144
 RESULT 190
 AAE04480
 ID AAE04480 standard; Protein; 234 AA.
 XX AAE04480;
 CC

XX 04-SEP-2001 (first entry)
 DT Human single chain gonadotropin analog no:7.
 XX Human; single chain gonadotropin analog no:7; anti-infertility; drug;
 KW peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;
 KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
 KW glycoprotein; infertility; fusion protein.
 OS Homo sapiens.
 OS Synthetic.
 XX Location/Qualifiers
 FH Key
 FT Region
 FT 21..120
 FT /note= "Corresponds to 1-100 amino acids of human
 FT chorionic gonadotropin (CG) beta-subunit".
 FT 121..134
 FT /note= "Corresponds to 95-108 amino acids of human
 FT chorionic gonadotropin (CG) beta-subunit".
 FT 135..142
 FT /note= "Stimulating hormone (FSH) beta-subunit".
 FT /note= "Linker peptide".
 FT 143..234
 FT /note= "Corresponds to 1-92 amino acids of human single
 FT chain gonadotropin alpha-subunit".
 FT US6238890-B1.
 XX 29-MAY-2001.
 XX 25-AUG-1997; 97US-0918288.
 PR 18-FEB-1994; 94US-0199382.
 PR 12-AUG-1994; 94US-0289396.
 PR 22-SEP-1994; 94US-0310590.
 PR 04-NOV-1994; 94US-0334628.
 PR 07-DEC-1994; 94US-0351591.
 PR 07-JUN-1995; 95US-0475049.
 PR 09-MAY-1997; 97US-0853524.
 XX (UNIW) UNIV WASHINGTON.
 XI Boime I, Moyle WR;
 XX WPI; 2001-366474/38.
 DR N-PSDB; AAD08797.
 PT New DNA or RNA encoding single chain protein useful in treating
 PT infertility, as aids in vitro fertilization techniques, or other
 PT therapeutic methods associated with the native hormones
 XX Claim 9; Fig 11; 87pp; English.
 CC The invention relates to human single chain forms of the glycoprotein
 CC hormone quartet which is an agonist or antagonist of luteinizing hormone
 CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone
 CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers
 CC having identical alpha subunits and differing beta subunits. The agonist
 CC forms of single chain hormones are used in treating infertility, as aids
 CC in vitro fertilization techniques, and other therapeutic methods
 CC associated with the native hormones. The single chain hormones are useful
 CC as reagents in a manner similar to heterodimers, as diagnostic tools to
 CC detect the presence of antibodies with respect to the native proteins in
 CC biological samples, as a control reagent in assay kits for assessing the
 CC levels of these hormones in various samples, and in detecting and purifying
 CC receptors to which the native hormones bind. The single chain hormones
 CC are also used in affinity chromatographic preparation tools for
 CC antihormone antibodies. They are used as purification tools for
 CC isolation of subsequent preparations of these materials and to monitor
 CC levels of single chain hormones administered as drugs. The single chain
 CC glycoproteins are used to generate antibodies specifically immunoreactive
 CC with these new compounds, as substitutes for the heterodimeric forms of
 CC hormones. The present sequence is human single chain gonadotropin

PN W09522340-A1.
XX
PD 24-AUG-1995;

FT	Region	135..142	/note= "Linker peptide"
FT		143..234	
FT	Region		/note= "Corresponds to 1-92 amino acids of human single

RESULT 192	
AAE04510	
ID	AAE04510 standard; Protein; 234 AA.
XX	
AC	AAE04510;
XX	
XX	
XX	
XX	04-SEP-2001 (first entry)
XX	
DE	Human single chain gonadotropin analog no:3a.
XX	
KW	Human; single chain gonadotropin analog no:3a; anti-infertility; drug;
KW	peptide therapy; luteinising hormone; LH; follicle stimulating hormone;
KW	FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
KW	glycoprotein; infertility; fusion protein; mutant; mutain.
XX	
XX	
OS	Homo sapiens.
XX	
XX	Synthetic.
XX	
PH	Key
FT	Location/Qualifiers
FT	21..134
FT	/note="Corresponds to 1-114 amino acids of human
FT	luteinising hormone (LH) beta-subunit"
FT	50
FT	/note="Wild type Asn substituted with Xaa, where Xaa
FT	refers to Gln or other amino acid"
FT	135..142
FT	/note="Linker peptide"
FT	194
FT	/note="Corresponds to 1-92 amino acids of human single
FT	chain gonadotropin alpha-subunit"
FT	194
FT	Misc-difference


```

Query Match          70.7%  Score 549;  DB 22;  Length 237;
Best Local Similarity 86.0%  Pred. No. 3.3e-42;
Matches 104;  Conservative 2;  Mismatches 15;  Indels 0;  Gaps 0;
QY  2  SKELPRCRPIINATLVEKGGPCVICTVNTTCAGYCPFTLVQGVLPALPOLVCMYR 61
    |||||

```

Key	Location/Qualifiers
FT	1-20
FT	/label= leader
FT	21..120
FT	/label= hCG_beta_subunit_{1-100}
FT	Misc-difference 33
FT	/note= "wild-type Asn at position 13 of the beta-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site."
FT	Misc-difference 50
FT	/note= "wild-type Asn at position 30 of the beta-subunit is pref. replaced by another amino

Db 21 SKEPLRPCRPIXATLAVEKEGCPVCITVXTTICAGYCPMTTRVLQGLRALPQVVCNYR 80

	Matches	98;	Conservative	6;	Mismatches	12;	Indels	0;	Gaps	0;
Qy	2	SKEPLRRCPTNATLAVEKSGCPICITVTTTCAGTCTPMTYLGVLGVPALPOVCWTR	61	|||||	|||||	|||||	|||||	|||||	|||||	|||||
Db	1	SRELPWCPIINALLAVEKSGCPICITVTTTCAGTCTPMTYLGVLGVPALPOVCWTR	60	|||||	|||||	|||||	|||||	|||||	|||||	|||||
Qy	62	DVFRESFRLDGGCPGVNPVSVALSCQCACLCRRSTDDCGSKPHLTCDQPRFQ	117	|||||	|||||	|||||	|||||	|||||	|||||	|||||
Db	61	DVFRESFRLDGGCPGVDPVSPFPVSLSCRCGRSRSTDDCGSKPHLTCDHPPQ	116	|||||	|||||	|||||	|||||	|||||	|||||	|||||
<hr/>										
RESULT	198									
AAU04622	1									
ID	AAU04622	standard; protein; 114 AA.								
CC	XX	AAU04622;								
AC	XX	AAU04622;								
DT	XX	23-OCT-2001 (first entry)								
DE	XX	Human luteinising hormone beta subunit, amino acids 1-114.								
KW	XX	Huamg; chorionic gonadotropin; bCG; glycoprotein hormone; infertility;								
KW	XX	luteinising hormone; LH; follicle stimulating hormone; FSH;								
OS	XX	thyroid stimulating hormone; TH.								
OS	XX	Homo sapiens.								
PX	XX	US6242580-B1.								
PN	XX	05-JUN-2001.								
PF	XX	31-MAR-1999; 99US-0282357.								
PR	XX	25-AUG-1997; 97US-0918488.								
PR	XX	18-FEB-1994; 94US-019382.								
PR	XX	12-AUG-1994; 94US-0289396.								
PR	XX	22-SEP-1994; 94US-0310590.								
PR	XX	07-DEC-1994; 94US-031568.								
PR	XX	07-DEC-1994; 94US-031568.								
PR	XX	07-JUN-1995; 95US-0475049.								
PR	XX	09-MAY-1997; 97US-0853524.								
PA	XX	(UNIW) UNIV WASHINGTON.								
PI	XX	Bolme I., Moyle WR;								
DR	XX	WPI; 2001-424301/45.								
PT	XX	New single chain forms of the glycoprotein hormone quartet useful for								
PT	XX	generating antibodies specifically immunoreactive with the new								
PT	XX	compounds in treating infertility, or as aids for in vivo								
PT	XX	fertilization techniques								
XX	XX	Example 19; Column 35; 86pp; English.								
XX	XX	The sequence represents the amino acid sequence of human luteinising								
CC	XX	hormone beta subunit, amino acids 1-114. The protein is an								
CC	XX	important glycoprotein hormone heterodimer, along with chorionic gonad-								
CC	XX	otropin (PG), follicle stimulating hormone (FSH), thyroid stimulating								
CC	XX	hormone (TH) which all have identical alpha subunits containing a								
CC	XX	subunit. The proteins are useful for generating antibodies specifically								
CC	XX	immunoreactive with new compounds, as substitutes for the								
CC	XX	heterodimeric forms of the hormones, in the treatment of infertility, as								
CC	XX	aids for in vivo fertilisation techniques, and in other therapeutic								
CC	XX	methods associated with the native hormones. The single chain proteins								
CC	XX	are further useful as reagents in a manner similar to the heterodimers,								
CC	XX	as diagnostic tools to detect the presence of antibodies with respect to								
CC	XX	the native proteins in the biological samples, as control reagents in								
CC	XX	assay kits for assessing the levels of these hormones in various samples,								
CC	XX	and the single chain forms of the heterodimers of gonadotrophins								
CC	XX	bind the single chain forms of the heterodimers of gonadotrophins								
CC	XX	following advantages over their dimeric forms: they are more stable,								
CC	XX	problems of recombinant production are reduced since only a single gene								

properties, compared to wild type CKGFs, are claimed. The CKGF superfamily comprises at least four families of growth factors: the glycoprotein hormones, the platelet-derived growth factor (PDGF) family, the neurotrophins and the transforming growth factor-beta family; the families are known to be structurally similar (especially comprising the cysteine knot topology) and it was shown that mutations at certain positions in the CKGF hairpin loops of family members and other members of the CKGF superfamily could significantly alter the biological activities of the CKGF.

A mutant thyroid stimulating hormone (TSH) heterodimer or analogue can be used to treat or prevent hypothyroidism (claimed). They can also be used to treat or prevent hyperthyroidism (claimed). The mutant heterodimer or analogue to stimulate iodine uptake, and subsequently administering radiolabeled iodine to treat the cancer or enable radiolabel detection (claimed).

positions in the CKGF hairpin loops of family members and other members of the CKGF superfamily could significantly alter the biological activities of the CKGF.

A mutant thyroid stimulating hormone (TSH) heterodimer or analogue can be engineered to treat or prevent hypothyroidism (claimed).

A mutant heterodimer or analogue of the CKGF superfamily could be used to treat or prevent hypothyroidism (claimed).

A mutant heterodimer or analogue to stimulate iodine uptake, and thereby enhance the effectiveness of iodine uptake, and thereby enhance the effectiveness of subsequent administering radiolabeled iodine to treat the cancer or enable radiolabel detection (claimed).

2	SKEPLRPRCPRI	NA	LA	VE	KE	GP	CV	IT	VT	NT	IC	AG	CT	PM	TV	RV	LG	VL	PA	LP	QV	CN	TR	61	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DS	1	SRELPWCHPI	NA	LA	VE	KE	GP	CV	IT	VT	NT	IC	AG	CT	PM	TV	RV	LG	VL	PA	LP	QV	CN	TR	
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Qy	62	DYVES	TR	LP	CP	RG	VP	NV	ST	VA	NS	OC	AL	CR	ST	ST	TC	GG	CP	KD	HP	LT	CD	DP	TR
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DB	61	DYVES	TR	LP	CP	RG	VP	NV	ST	VA	NS	OC	AL	CR	ST	ST	TC	GG	CP	KD	HP	LT	CD	DP	TR
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

RESULT 200
ID AAP60602 standard; Protein: 141 AA.
AAP60602

DT	01-JUL-1991 (first entry)
XX	
DE	Sequence of human beta luteinising hormone (LH).
XX	
KK	Contraceptive; fertility control; vaccine; reproductive hormone.
XX	
OS	Homo sapiens.

PN	W08607383-A.	
XX		
PD		
XX	18-DEC-1986.	
XX		
PF	04-JUN-1986;	86MO-US01226.
XX		
XX	18-JUL-1985;	85US-0756847.
PR		
XX	04-JUN-1985;	85US-0741168.
XX		
XX	(BIOT-) BIOTECHN RES PARTN.	
PA		
XX		
PI	Talmadge KD, Fiddes JC;	
XX		
DR	WPI; 1986-346603/52.	
DR	N-PSDB; AAN60524.	

WPI: 1986-346608/52.
N-PSDB; AAN60524.

Auto-antigen vaccines conferring antigenicity using multimers etc. - useful as species specific or cross-species effective, esp. for controlling fertility in mammals

Example; Fig 4; 101pp; English.

The patentors claim a vaccine effective against mammalian fertility comprising a multimer of a mammalian antigen.

CC essential region, a DNA sequence of formula : (Hormone)_n; n= 1-20;
CC Hormone= DNA sequence derived from the sequence encoding a
CC reproductive hormone. The hormone is esp. LH, GnRH, CG or FSH.

IX	Sequence	141 AA;
SQ		

	Query Match	70.08;	Score 544;	DB 7;	Length 141;	
	Best Local Similarity	85.10;	Access No. 54c42;			
	Matches 97;	Conservative	6;	Mismatches 11;	Indels	Gaps 0;
QY	2	SKEPRLPRCPARNATLAVEKGCPCVITVTNTICAGVCTFTRVLQGVGLALPQVCNTR	61			
QY	21	SREPLHPCHPARNATLAVEKGCPCVITVTNTICAGVCTFTRVLRVGLALPQVCNTR	80			
QY	62	DFVPEISIRLPGCPVCPVAVSVALSCGACPRSTDCGGGKHPIPLTCDQPR	115			
DB	81	DFVPEISIRLPGCPVCPVAVSVALSCGACPRSTDCGGGKHPIPLTCDQPR	134			

Search completed: October 11, 2002, 17:57:49
Job time : 39 secs

101	120	15.4	28	1	US-08-919-130-13
102	120	15.4	28	1	US-08-918-288-1
103	120	15.4	28	4	US-09-282-337-1
104	120	15.4	28	4	US-09-604-871-3
105	117	15.1	75	1	US-08-239-256-3
106	117	15.1	76	6	5177193-5
107	110	14.2	53	1	US-08-239-256-2
108	110	14.2	53	4	US-08-305-637-1
109	99	12.7	23	6	545127-3
110	91	11.7	56	1	US-08-936-558-208
111	91	11.7	56	1	US-08-246-332A-20
112	91	11.7	56	1	US-08-469-536A-20
113	91	11.7	56	1	US-08-734-591A-20
114	91	11.7	56	2	US-08-734-591A-20
115	91	11.7	56	2	US-08-469-660-20
116	91	11.7	56	2	US-08-470-335-20
117	91	11.7	56	4	US-08-470-335-20
118	91	11.7	56	4	US-08-735-031-20
119	91	11.7	56	4	US-08-735-031-20
120	91	11.7	56	5	US-08-735-031-20
121	88	11.3	78	2	US-08-470-335-20
122	88	11.3	78	2	US-08-470-335-20
123	88	11.3	78	2	US-08-470-335-20
124	88	11.3	78	2	US-08-470-335-20
125	85	10.9	42	1	US-08-470-335-20
126	84.5	10.9	37	2	US-08-470-335-20
127	84.5	10.9	37	2	US-08-470-335-20
128	83.5	10.7	38	2	US-08-470-335-20
129	83.5	10.7	38	2	US-08-470-335-20
130	81.5	10.5	207	2	US-08-470-335-20
131	81.5	10.5	207	2	US-08-470-335-20
132	81.5	10.5	207	2	US-08-470-335-20
133	78.5	10.1	709	4	US-08-470-335-20
134	78.5	10.1	713	4	US-08-753-247-6
135	78.5	10.1	713	4	US-08-753-247-9
136	78.5	10.1	713	4	US-08-753-247-12
137	78.5	10.1	713	4	US-08-753-247-12
138	78.5	10.1	713	4	US-08-753-247-12
139	78.5	10.1	713	4	US-08-753-247-12
140	78.5	10.1	713	4	US-08-753-247-12
141	78.5	10.1	713	4	US-08-753-247-12
142	78.5	10.1	713	4	US-08-753-247-12
143	78.5	10.1	713	4	US-08-753-247-12
144	78.5	10.1	713	4	US-08-753-247-12
145	78.5	10.1	713	4	US-08-753-247-12
146	78.5	10.1	713	4	US-08-753-247-12
147	77.5	9.7	419	4	US-08-753-247-12
148	77.5	9.7	419	4	US-08-753-247-12
149	77.5	9.7	419	4	US-08-753-247-12
150	74.5	9.6	539	2	US-08-753-247-12
151	74.5	9.6	539	2	US-08-753-247-12
152	74.5	9.6	539	2	US-08-753-247-12
153	74.5	9.6	539	2	US-08-753-247-12
154	74.5	9.6	539	2	US-08-753-247-12
155	74.5	9.6	539	2	US-08-753-247-12
156	74.5	9.6	539	2	US-08-753-247-12
157	73.5	9.5	167	4	US-08-753-247-12
158	73.5	9.5	167	4	US-08-753-247-12
159	73.5	9.5	167	4	US-08-753-247-12
160	73.5	9.5	167	4	US-08-753-247-12
161	73.5	9.5	167	4	US-08-753-247-12
162	73.5	9.5	167	4	US-08-753-247-12
163	73.5	9.5	167	4	US-08-753-247-12
164	73.5	9.5	167	4	US-08-753-247-12
165	73.5	9.5	167	4	US-08-753-247-12
166	73.5	9.5	167	4	US-08-753-247-12
167	73.5	9.5	167	4	US-08-753-247-12
168	73.5	9.5	167	4	US-08-753-247-12
169	73.5	9.5	167	4	US-08-753-247-12
170	72.9	9.3	452	1	US-08-753-247-12
171	72.9	9.3	452	1	US-08-753-247-12
172	72.9	9.3	452	1	US-08-753-247-12
173	72.9	9.3	452	1	US-08-753-247-12

Sequence 13, Appl	174	72	9.3	855	4	US-09-920-048-2
Sequence 1, Appl	175	71.5	9.2	78	4	US-08-158-564-3
Sequence 1, Appl	176	71.5	9.2	78	4	US-08-158-564-3
Sequence 3, Appl	177	71.5	9.2	451	1	US-08-570-157-2
Sequence 3, Appl	178	71	9.1	14	2	US-08-709-924-12
Patent No. 5177193	179	71	9.1	14	2	US-08-709-924-12
Sequence 2, Appl	180	71	9.1	14	4	US-08-709-948-12
Sequence 2, Appl	181	71	9.1	275	1	US-08-312-870-7
Patent No. 5451527	182	71	9.1	368	3	US-08-434-295-3
Sequence 20, Appl	183	71	9.1	368	3	US-09-411-500A-3
Sequence 20, Appl	184	71	9.1	368	3	US-09-411-500A-3
Sequence 20, Appl	185	71	9.1	492	2	US-08-733-570-5
Sequence 20, Appl	186	71	9.1	492	2	US-08-733-570-5
Sequence 20, Appl	187	71	9.1	572	6	5255770-7
Sequence 20, Appl	187	71	9.1	575	1	US-08-261-206A-59
Sequence 20, Appl	188	71	9.1	575	1	US-08-312-870-1
Sequence 20, Appl	189	71	9.1	575	1	US-08-312-870-1
Sequence 20, Appl	190	71	9.1	575	6	546668-6
Sequence 20, Appl	191	70.5	8.9	389	2	US-08-485-449-6
Sequence 20, Appl	192	69.5	8.9	580	3	US-08-565-253-21
Sequence 20, Appl	193	69.5	8.9	580	3	US-08-565-253-21
Sequence 20, Appl	194	69.5	8.9	590	3	US-08-709-924-11
Sequence 4, Appl	195	69	8.9	14	2	US-08-709-925-3
Sequence 4, Appl	196	69	8.9	14	4	US-08-709-948-3
Sequence 4, Appl	197	69	8.9	954	4	US-08-749-169A-3
Sequence 17, Appl	198	69	8.9	954	2	US-09-130-032A-3
Sequence 5, Appl	199	69	8.9	1276	4	US-08-937-236-3
Sequence 45, Appl	200	69	8.9	1291	4	US-08-569-214-3
Sequence 2, Appl	201	69	8.9	1291	4	US-08-537-236-2
Sequence 2, Appl	202	69	8.9	1295	1	US-08-469-427A-11
Sequence 15, Appl	203	68.5	8.8	188	2	US-08-569-063C-11
Sequence 15, Appl	204	68.5	8.8	188	2	US-08-569-063C-11
Sequence 6, Appl	205	68.5	8.8	188	2	US-08-569-063C-11
Sequence 9, Appl	206	68.5	8.8	188	4	US-08-795-430-57
Sequence 12, Appl	207	68.5	8.8	421	4	US-08-759-628-5
Sequence 2, Appl	208	68.5	8.8	430	4	US-09-156-836B-2
Sequence 4, Appl	209	68	8.8	11	6	5496531-1
Sequence 4, Appl	210	68	8.8	11	6	5496531-1
Sequence 4, Appl	211	68	8.8	96	2	US-08-767-026-9
Sequence 4, Appl	212	68	8.8	96	2	US-08-560-005-5
Sequence 4, Appl	213	68	8.8	1149	4	US-09-418-540-5
Sequence 4, Appl	214	68	8.8	1149	4	US-09-146-283-2
Sequence 2, Appl	215	67.5	8.7	515	3	US-08-579-823A-2
Sequence 2, Appl	216	67.5	8.7	515	3	US-08-344-195-2
Sequence 2, Appl	217	67.5	8.7	515	4	US-08-467-083-68
Sequence 2, Appl	218	67.5	8.7	1255	1	US-08-467-083-68
Sequence 9, Appl	219	67.5	8.7	1255	2	US-08-467-083-68
Sequence 9, Appl	220	67.5	8.7	1255	2	US-08-467-083-68
Sequence 7, Appl	221	67.5	8.7	1255	2	US-08-635-101-2
Sequence 7, Appl	222	67.5	8.7	1255	2	US-08-468-545B-68
Sequence 2, Appl	223	67.5	8.7	1255	2	US-08-356-786-2
Sequence 2, Appl	224	67.5	8.7	1255	3	US-08-466-680B-68
Sequence 2, Appl	225	67	8.6	13	2	US-08-709-924-6
Sequence 2, Appl	226	67	8.6	13	2	US-08-709-925-6
Sequence 2, Appl	227	67	8.6	14	4	US-08-709-948-6
Sequence 1, Appl	228	67	8.6	14	2	US-08-709-924-56
Sequence 5, Appl	229	67	8.6	14	4	US-08-709-948-56
Sequence 5, Appl	230	67	8.6	14	4	US-08-709-948-56
Sequence 24, Appl	231	66.5	8.6	93	2	US-08-327-363-1
Sequence 95, Appl	232	66.5	8.6	93	4	US-09-158-565-1
Patent No. 5342798	233	66	8.5	11	3	US-08-592-500-43
Sequence 5, Appl	234	66	8.5	11	3	US-08-195-006-43
Sequence 113, Appl	235	66	8.5	11	5	PCT-US94-07644A-43
Sequence 125, Appl	236	66	8.5	91	4	US-09-235-451-45
Sequence 18, Appl	237	66	8.5	413	1	US-08-700-749A-1
Sequence 18, Appl	238	66	8.5	413	3	US-09-030-684-1
Sequence 18, Appl	239	66	8.5	413	3	US-09-030-684-1
Sequence 4, Appl	240	66	8.5	413	3	US-09-030-685-1
Sequence 4, Appl	241	66	8.5	413	3	US-09-030-685-1
Sequence 4, Appl	242	66	8.5	839	4	US-09-030-683-1
Sequence 4, Appl	243	66	8.5	839	4	US-09-197-636-2
Sequence 2, Appl	243	66	8.5	839	4	US-09-197-636-4
Sequence 16, Appl	244	66	8.5	839	4	US-09-197-636-8
Sequence 16, Appl	245	66	8.5	839	4	US-09-235-451-34
Sequence 2, Appl	246	66	8.5	886	3	US-09-110-116-3

Sequence 2,	Appl.
Sequence 3,	Appl.
Sequence 4,	Appl.
Sequence 5,	Appl.
Sequence 6,	Appl.
Sequence 7,	Appl.
Sequence 8,	Appl.
Sequence 9,	Appl.
Sequence 10,	Appl.
Sequence 11,	Appl.
Sequence 12,	Appl.
Sequence 13,	Appl.
Sequence 14,	Appl.
Sequence 15,	Appl.
Sequence 16,	Appl.
Sequence 17,	Appl.
Sequence 18,	Appl.
Sequence 19,	Appl.
Sequence 20,	Appl.
Sequence 21,	Appl.
Sequence 22,	Appl.
Sequence 23,	Appl.
Sequence 24,	Appl.
Sequence 25,	Appl.
Sequence 26,	Appl.
Sequence 27,	Appl.
Sequence 28,	Appl.
Sequence 29,	Appl.
Sequence 30,	Appl.
Sequence 31,	Appl.
Sequence 32,	Appl.
Sequence 33,	Appl.
Sequence 34,	Appl.
Sequence 35,	Appl.
Sequence 36,	Appl.
Sequence 37,	Appl.
Sequence 38,	Appl.
Sequence 39,	Appl.
Sequence 40,	Appl.
Sequence 41,	Appl.
Sequence 42,	Appl.
Sequence 43,	Appl.
Sequence 44,	Appl.
Sequence 45,	Appl.
Sequence 46,	Appl.
Sequence 47,	Appl.
Sequence 48,	Appl.
Sequence 49,	Appl.
Sequence 50,	Appl.
Sequence 51,	Appl.
Sequence 52,	Appl.
Sequence 53,	Appl.
Sequence 54,	Appl.
Sequence 55,	Appl.
Sequence 56,	Appl.
Sequence 57,	Appl.
Sequence 58,	Appl.
Sequence 59,	Appl.
Sequence 60,	Appl.
Sequence 61,	Appl.
Sequence 62,	Appl.
Sequence 63,	Appl.
Sequence 64,	Appl.
Sequence 65,	Appl.
Sequence 66,	Appl.
Sequence 67,	Appl.
Sequence 68,	Appl.
Sequence 69,	Appl.
Sequence 70,	Appl.
Sequence 71,	Appl.
Sequence 72,	Appl.
Sequence 73,	Appl.
Sequence 74,	Appl.
Sequence 75,	Appl.
Sequence 76,	Appl.
Sequence 77,	Appl.
Sequence 78,	Appl.
Sequence 79,	Appl.
Sequence 80,	Appl.
Sequence 81,	Appl.
Sequence 82,	Appl.
Sequence 83,	Appl.
Sequence 84,	Appl.
Sequence 85,	Appl.
Sequence 86,	Appl.
Sequence 87,	Appl.
Sequence 88,	Appl.
Sequence 89,	Appl.
Sequence 90,	Appl.
Sequence 91,	Appl.
Sequence 92,	Appl.
Sequence 93,	Appl.
Sequence 94,	Appl.
Sequence 95,	Appl.
Sequence 96,	Appl.
Sequence 97,	Appl.
Sequence 98,	Appl.
Sequence 99,	Appl.
Sequence 100,	Appl.

REFERENCE/DOCKET NUMBER: 0240.002
TELECOMMUNICATION INFORMATION:
TELEPHONE: 510-601-2706
TELEFAX: 510-655-3542
INFORMATION FOR SEQ ID NO: 10:
SEQUENCE CHARACTERISTICS:
LENGTH: 145 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-475-213-10

Query Match 99.1%; Score 770; DB 1; Length 145;
Best Local Similarity 100.0%; Pred. No. 1.3e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 61
DB 1 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 60
QY 62 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 121
DB 61 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 2

US-08-395-238-2

; Sequence 2, Application US/08395238

; Patent No. 5864488

; GENERAL INFORMATION:

; APPLICANT: ISSACS, Neil William

; APPLICANT: LAPHORN, Adrian Jonathan

; APPLICANT: HARRIS, Deborah Claire

; TITLE OF INVENTION: THREE DIMENSIONAL HORMONE STRUCTURE

; NUMBER OF SEQUENCES: 3

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: AKZO NOBEL PATENT DEPARTMENT

; STREET: 1300 PICCARD DRIVE, SUITE 206

; CITY: ROCKVILLE

; STATE: MARYLAND

; COUNTRY: UNITED STATES

; ZIP: 20850

; COMPUTER READABLE FORM:

; ARCHIVE: PC COMPATIBLE

; OPERATING SYSTEM: PC-DOS/MS-DOS

; SOFTWARE: Patent Release #1.0, Version #1.25

; CURRENT APPLICATION DATA:

; APPLICATION NUMBER: US/08/395,238

; FILING DATE: 24-FEB-1995

; PRIOR APPLICATION DATA:

; APPLICATION NUMBER: GB 9403600.1

; FILING DATE: 24-FEB-1994

; ATTORNEY/AGENT INFORMATION:

; NAME: WILLIAM BLACKSTONE

; REGISTRATION NUMBER: 2,722

; INFORMATION FOR SEQ ID NO: 2:

; SEQUENCE CHARACTERISTICS:

; LENGTH: 145 amino acids

; TYPE: amino acid

; STRANDEDNESS: single

; TOPOLOGY: linear

; MOLECULE TYPE: protein

; HYPOTHETICAL: NO

; ANTI-SENSE: NO

; ORIGINAL SOURCE:

; ORGANISM: Homo sapiens

; STRAIN: BETA-SUBUNIT HUMAN CHORIONIC GONADOTROPIN

US-08-395-238-2

Query Match 99.1%; Score 770; DB 2; Length 145;

Best Local Similarity 100.0%; Pred. No. 1.3e-66;

Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 61

DB 1 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 60

QY 62 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 121

DB 61 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 120

QY 122 SKAPPSLPSPSLRPGSDT 141

DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 3

US-09-142-320-12

; Sequence 12, Application US/09142320

; Patent No. 6194154

; GENERAL INFORMATION:

; APPLICANT: Bellet, Dominique

; APPLICANT: Bidart, Jean-Michel

; APPLICANT: Vidaut, Michel

; TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION DETECTION METHOD

; FILE REFERENCE NUMBER: 055690

; CURRENT APPLICATION NUMBER: US/09/142,320

; EARLIER FILING DATE: 1998-09-04

; EARLIER APPLICATION NUMBER: PCT/FR97/00361

; EARLIER FILING DATE: 1997-02-28

; EARLIER APPLICATION NUMBER: FR 96 02683

; EARLIER FILING DATE: 1996-03-04

; NUMBER OF SEQ ID NOS: 24

; SOFTWARE: Patentin Ver. 2.0

; SEQ ID NO 12

; LENGTH: 145

; TYPE: PRT

; ORGANISM: human

US-09-142-320-12

Query Match 99.1%; Score 770; DB 4; Length 145;

Best Local Similarity 100.0%; Pred. No. 1.3e-66;

Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 61

DB 1 SKPELRPCRPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQVWYR 60

QY 62 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 121

DB 61 DVFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGGPKDHPKLTCDPRFQDSS 120

QY 122 SKAPPSLPSPSLRPGSDT 141

DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 4

US-09-142-320-13

; Sequence 13, Application US/09142320

; Patent No. 6194154

; GENERAL INFORMATION:

; APPLICANT: Bellet, Dominique

; APPLICANT: Bidart, Jean-Michel

; APPLICANT: Vidaut, Michel

; APPLICANT: Lazar, Vladimir

; TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION DETECTION METHOD

; FILE REFERENCE: 055691/0140

; CURRENT APPLICATION NUMBER: US/09/142,320

/ CURRENT FILING DATE: 1998-09-04
 / EARLIER APPLICATION NUMBER: PCT/FR97/003061
 / EARLIER FILING DATE: 1997-02-26
 / EARLIER APPLICATION NUMBER: FR 96 03683
 / EARLIER FILING DATE: 1996-03-04
 / NUMBER OF SEQ ID NOS: 2
 / SOFTWARE: Patent Vcr. 2.0
 / SEQ ID NO. 13
 / LENGTH: 145
 / TYPE: pep
 / ORGANISM: human
 / US-09-142-320-13

Query Match	99.18	Score 770	DB 4	Length 145
Best Local Similarity	100.0%	Pred. No. 1,36-66		
Matches 140	Conservative 0	Mismatches 0	Indels 0	Gaps 0
OY	2	SKPELRPCRPINATLAVKSGGCPVCITVTTCICAGCTCTRTVLQGVLPALPOVVCNTR	61	|||||
DB	1	SKPELRPCRPINATLAVKSGGCPVCITVTTCICAGCTCTRTVLQGVLPALPOVVCNTR	60	|||||
OY	62	DVRFELRLPGCPGNVPVSTAVALSQCALCRRTTDCGGKDRPDLTCDDPREFQDSSS	121	|||||
DB	61	DVRFELRLPGCPGNVPVSTAVALSQCALCRRTTDCGGKDRPDLTCDDPREFQDSSS	120	|||||
OY	122	SKAPPPSLPSPSLPGSPDT	141	|||||
DB	121	SKAPPPSLPSPSLPGSPDT	140	|||||

```

RESULTS 5
US-09-142-320-14
: Sequence 14, Application US/09142320
: Patent No. 6194154
: GENERAL INFORMATION:
: APPLICANT: Bellet, Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Vidaud, Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION
: PRIORITY REFERENCE: 0636691/0440
: CURRENT FILING DATE: 1998-09-04
: CURRENT FILING DATE: 1998-09-04
: EARLIER APPLICATION NUMBER: PCT/FR97/00361
: EARLIER FILING DATE: 1997-02-28
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24
: SOFTWARE: Patentin Ver. 2.0
: SEQ ID NO 14
: LENGTH: 145
: ORGANISM: HUMAN
US-09-142-320-14
DETECTION METHOD

```

	Query Match	99.1% Score 770; DB 4; Length 145;	
	Best Local Similarity	100.0%; Pred. No. 1.3e-66;	
	Matches 140; Conservative 0;	Mismatches 0; Indels 0; Gaps 0;	
QY	2	SKPELRPCRPINATLAVKGGPCVCITVTNTICAGYCTPTRTVGLGVLPALQVVCNTR	61
DB	1	SKPELRPCRPINATLAVKGGPCVCITVTNTICAGYCTPTRTVGLGVLPALQVVCNTR	60
QY	62	DVAFESTRLGCGPNVNPVSTAVALSQCALCRNSTCCGGKDFRPDLTCDPFRQSSS	121
DB	61	DVAFESTRLGCGPNVNPVSTAVALSQCALCRNSTCCGGKDFRPDLTCDPFRQSSS	120
QY	122	SKAPPSPSLSPSRLPQSPDT	141
DB	121	SKAPPSPSLSPSRLPQSPDT	140

RESULT 6

```

US-09-142-320-15
Sequence 15, Application US/09142320
Patent No. 6194154
GENERAL INFORMATION:
APPLICANT: Beillet, Jean-Michel
APPLICANT: Bldard, Dominique
APPLICANT: Vidaud, Michel
APPLICANT: Lazar, Vladimir
APPLICANT: Lachet, Jean-Michel
FILE REFERENCE: 065691/0140
CURRENT APPLICATION NUMBER: US/09/142,320
CURRENT FILING DATE: 1998-09-04
EARLIER APPLICATION NUMBER: PCT/FR97/00361
EARLIER FILING DATE: 1997-02-28
EARLIER APPLICATION NUMBER: FR 96 02683
EARLIER FILING DATE: 1996-03-04
NUMBER OF SEQ ID NOS: 24
SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 15
LENGTH: 145
TYPE: PRT
ORGANISM: human
US-09-142-320-15

```

	Query Match	99.1%	Score	770	DB	4	Length	145
	Residual Similarity	100.0%	Identical	1.5e+66				
	Matches	140	Conservative	0	Mismatches	0	Indels	0
QY	2	SKPELRPCRPINATLAVEKGGCPVCIIVNTTICAGYCTPTMTRVLQGVLPALPOVQVCNRR	61					
Db	1	SKPELRPCRPINATLAVEKGGCPVCIIVNTTICAGYCTPTMTRVLQGVLPALPOVQVCNRR	60					
QY	62	DYRFESIRLGGCPRGVNPVSVTAVALSCQACLRSTTDCGGPKRPMTCDPDRPQSSSS	121					
Db	61	DYRFESIRLGGCPRGVNPVSVTAVALSCQACLRSTTDCGGPKRPMTCDPDRPQSSSS	120					
QY	122	SKAPPSLPSPSRLGSPDST	141					
Db	121	SKAPPSLPSPSRLGSPDST	140					

```

1  RESULT 7
2  000-918-388-68
3  1 Sequence 68, Application US/08918288
4  1 Patent No. 6238590
5  1 GENERAL INFORMATION:
6  1 APPLICANT: BOIME, Irving
7  1 APPLICANT: MOYLE, William R.
8  1 TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
9  1 TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
10 1 NUMBER OF SEQUENCES: 83
11 1 CORRESPONDENCE ADDRESS:
12 1 ADDRESSEE: MORRISON & FORKSTER
13 1 STREET: 2800 Pennsylvania Avenue, NW, suite 5500
14 1 CITY: Washington
15 1 STATE: DC
16 1 COUNTRY: USA
17 1 ZIP: 20006-1888
18 1 COMPUTER READABLE FORM:
19 1 MEDIUM TYPE: Diskette
20 1 COMPUTER: IBM Compatible
21 1 OPERATING SYSTEM: DOS
22 1 SOFTWARE: FastSeq for Windows Version 2.0
23 1 CURRENT APPLICATION DATA:
24 1 APPLICATION NUMBER: US/08/918,288
25 1 FILING DATE:
26 1 CLASSIFICATION:
27 1 PRIORITY APPLICATION DATA:
28 1 PRIORITY APPLICATION NUMBER: 09/282,357
29 1 FILING DATE:
30 1 APPLICATION NUMBER: 08/953,524
31 1 FILING DATE: 09-MAY-1997
32 1 APPLICATION NUMBER: 08/199,382

```

;; FILING DATE: 18-FEB-1994
;; ATTORNEY/AGENT INFORMATION:
;; NAME: Murashige, Kate H
;; REGISTRATION NUMBER: 29,959
;; REFERENCE/DOCKET NUMBER: 29500-20050.25
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: 202-887-1500
;; TELEFAX: 202-887-0763
;; TELEX:
;; INFORMATION FOR SEQ ID NO: 68:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 145 amino acids
;; TYPE: amino acid
;; STRANDEDNESS: single
;; TOPOLOGY: linear
;; US-09-282-357-68
Query Match 99.1%; Score 770; DB 4; Length 145;
Best Local Similarity 100.0%; Pred. No. 1.3e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Oy 2 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGLPALPQVVCNVR 61
Db 1 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGLPALPQVVCNVR 60
Oy 62 DVRFESIRLPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPLTCDPFRQDSSS 121
Db 61 DVRFESIRLPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPLTCDPFRQDSSS 120
Oy 122 SKAPPSLPSPRLPGSDT 141
Db 121 SKAPPSLPSPRLPGSDT 140
RESULT 8
US-09-282-357-68
; Sequence 68, Application US/09282357
; Patent No. 6242580
; GENERAL INFORMATION:
; APPLICANT: ROINE, Irving
; APPLICANT: MOYLE, William R.
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
; NUMBER OF SEQUENCES: 83
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-1888
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; OPERATING SYSTEM: DOS
; SOFTWARE: FASTSEQ for Windows Version 2.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/282,357
; FILING DATE:
; CLASSIFICATION: 536
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/918,288
; FILING DATE: 25 AUG-1997
; APPLICATION NUMBER: 08/953,524
; FILING DATE: 09-MAY-1997
; APPLICATION NUMBER: 08/199,382
; FILING DATE: 18-FEB-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20050.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-887-1500
; TELEFAX: 202-887-0763

;; TELEFAX: 202-887-0763
;; TELEX:
;; INFORMATION FOR SEQ ID NO: 68:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 145 amino acids
;; TYPE: amino acid
;; STRANDEDNESS: single
;; TOPOLOGY: linear
;; US-09-282-357-68
Query Match 99.1%; Score 770; DB 4; Length 145;
Best Local Similarity 100.0%; Pred. No. 1.3e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Oy 2 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGLPALPQVVCNVR 61
Db 1 SKEPLRRCRPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGLPALPQVVCNVR 60
Oy 62 DVRFESIRLPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPLTCDPFRQDSSS 121
Db 61 DVRFESIRLPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPLTCDPFRQDSSS 120
Oy 122 SKAPPSLPSPRLPGSDT 141
Db 121 SKAPPSLPSPRLPGSDT 140
RESULT 9
US-08-918-288-3
; Sequence 3, Application US/08918288
; Patent No. 6238950
; GENERAL INFORMATION:
; APPLICANT: ROINE, Irving
; APPLICANT: MOYLE, William R.
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
; NUMBER OF SEQUENCES: 83
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-1888
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; OPERATING SYSTEM: DOS
; SOFTWARE: FASTSEQ for Windows Version 2.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/918,288
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 09/282,357
; FILING DATE:
; APPLICATION NUMBER: 08/953,524
; FILING DATE: 09-MAY-1997
; APPLICATION NUMBER: 08/199,382
; FILING DATE: 18-FEB-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20050.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-887-1500
; TELEFAX: 202-887-0763
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 265 amino acids
; TYPE: amino acid
; STRANDEDNESS: single


```

; TOPOLOGY: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: Internal
US-08-918-288-3

Query Match          99.1%; Score 770; DB 4; Length 265;
Best Local Similarity 100.0%; Pred. No. 2.6e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 80
QY 62 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 121
DB 81 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 10
US-08-918-288-39
; Sequence 39, Application US/08918288
; Patent No. 6242580
; GENERAL INFORMATION:
; APPLICANT: BOIME, Irving
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
; NUMBER OF SEQUENCES: 83
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-1888
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; COMPUTER: IBM Compatible
; OPERATING SYSTEM: DOS
; SOFTWARE: FASTSEQ for Windows Version 2.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/918,288
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 09/282,357
; FILING DATE:
; APPLICATION NUMBER: 08/853,524
; FILING DATE: 09-MAY-1997
; APPLICATION NUMBER: 08/199,382
; FILING DATE: 18-FEB-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20050.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-887-1500
; TELEFAX: 202-887-0763
; TELEX:
; INFORMATION FOR SEQ ID NO: 39:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 265 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: Internal
US-08-918-288-39

Query Match          99.1%; Score 770; DB 4; Length 265;
Best Local Similarity 100.0%; Pred. No. 2.6e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 80
QY 62 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 121
DB 81 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 11
US-09-282-357-3
; Sequence 3, Application US/09282357
; Patent No. 6242580
; GENERAL INFORMATION:
; APPLICANT: BOIME, Irving
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
; NUMBER OF SEQUENCES: 83
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-1888
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; COMPUTER: IBM Compatible
; OPERATING SYSTEM: DOS
; SOFTWARE: FASTSEQ for Windows Version 2.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/282,357
; FILING DATE:
; CLASSIFICATION: 536
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/918,288
; FILING DATE: 25 AUG-1997
; APPLICATION NUMBER: 08/853,524
; FILING DATE: 09-MAY-1997
; APPLICATION NUMBER: 08/199,382
; FILING DATE: 18-FEB-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20050.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-887-1500
; TELEFAX: 202-887-0763
; TELEX:
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 265 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: Internal
US-09-282-357-3

Query Match          99.1%; Score 770; DB 4; Length 265;
Best Local Similarity 100.0%; Pred. No. 2.6e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVLQGVLPALPOVVCNTR 80
QY 62 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 121
DB 81 DVRFESIRLPCPGPVNPNVSYAVALSOCALCRSTTDCGPKDHPRLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160
```

Db 21 SKPLPRPCRPINATLAVKEGCPVCIIVNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80
OY 62 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 121
Db 81 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 140
OY 122 SKAPPSLPSPSRLPGPSDT 141
Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 12

US-09-282-357-39
Sequence 39, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
FILING DATE: US/09/282,357
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Morrison & Foerster
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 39:
SEQUENCE CHARACTERISTICS:
LENGTH: 265 amino acids
STRANDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-09-282-357-39

Query Match 99.1%; Score 770; DB 4; Length 265;
Best Local Similarity 100.0%; Pred. No. 2.6e-66;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKPLPRPCRPINATLAVKEGCPVCIIVNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 61
Db 21 SKPLPRPCRPINATLAVKEGCPVCIIVNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80
OY 62 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 121

Db 81 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 140
OY 122 SKAPPSLPSPSRLPGPSDT 141
Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 13

US-08-709-924-2
Sequence 2, Application US/08709924
Patent No. 5968513
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
NUMBER OF SEQUENCES: 26
CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/709,924
FILING DATE: 09-SEP-1996
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: HIRSHOCK, S. Leslie
REGISTRATION NUMBER: 87972
REFERENCE/DOCKET NUMBER: 8769-018
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 165 amino acids
TYPE: amino acid
STRANDNESS: linear
MOLECULE TYPE: protein
US-08-709-924-2

Query Match 98.7%; Score 767; DB 2; Length 165;
Best Local Similarity 99.3%; Pred. No. 2.9e-66;
Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKPLPRPCRPINATLAVKEGCPVCIIVNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 61
Db 21 SKPLPRPCRPINATLAVKEGCPVCIIVNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80
OY 62 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 121
Db 81 DVRESIRLPCGCGVNVVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRFQDSSS 140
OY 122 SKAPPSLPSPSRLPGPSDT 141
Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 14

US-08-709-925-2
Sequence 2, Application US/08709925
Patent No. 5997871
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.

APPLICANT: Bryant, Joseph
TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
CURRENT APPLICATION DATA: US/08/709,948
FILING DATE: 09-SEP-1996
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: Mirock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-016
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 165 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-709-948-2

Query Match 98.74; Score 767; DB 2; Length 165;
Best Local Similarity 99.34; Pred. No. 2.9e-66;
Matches 139; Conservative 1; Mismatches 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKGGPCVITVTTCAGYCTMTTRVLQGLPALPQVVCNTR 61
DB 21 SKEPLRRCRPNATLAVEKGGPCVITVTTCAGYCTMTTRVLQGLPALPQVVCNTR 80
QY 62 DYFESIRLPGCRPNVPSYAVALSQCCLCRRTTDCGGKDPHPLTCDPRFQDSSS 121
DB 81 DYFESIRLPGCRPNVPSYAVALSQCCLCRRTTDCGGKDPHPLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 15
US-08-709-948-2
Sequence 2, Application US/08/709948
Patent No. 6319504
GENERAL INFORMATION:
APPLICANT: Bryant, Joseph
TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
CURRENT APPLICATION DATA: 26
FILING DATE: 09-SEP-1996
CLASSIFICATION: 26
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
FILING DATE: 09-SEP-1996
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: Muccio, Richard R.

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent Release #1.0, Version #1.30
CURRENT APPLICATION DATA: US/08/709,948
FILING DATE: 09-SEP-1996
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: Mirock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-016
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 165 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-709-948-2

Query Match 98.74; Score 767; DB 4; Length 165;
Best Local Similarity 99.34; Pred. No. 2.9e-66;
Matches 139; Conservative 1; Mismatches 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKGGPCVITVTTCAGYCTMTTRVLQGLPALPQVVCNTR 61
DB 21 SKEPLRRCRPNATLAVEKGGPCVITVTTCAGYCTMTTRVLQGLPALPQVVCNTR 80
QY 62 DYFESIRLPGCRPNVPSYAVALSQCCLCRRTTDCGGKDPHPLTCDPRFQDSSS 121
DB 81 DYFESIRLPGCRPNVPSYAVALSQCCLCRRTTDCGGKDPHPLTCDPRFQDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 16
US-08-425-673-1
Sequence 1, Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
Reduced Immunogenicity and Increased Selectivity and Activity and
Methods for Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Richard R. Muccio
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA
ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: Muccio, Richard R.

REGISTRATION NUMBER: 12 538
REFERENCE/DOCKET NUMBER: UND 1.0-004
TELECOMMUNICATION INFORMATION:
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 145 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO
US-08-425-673-1

Query Match 98.3%; Score 764; DB 1; Length 145;
Best Local Similarity 99.3%; Pred. No. 4.9e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTWVQLQVLPALPQVVCNVR 61
DB 1 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTWVQLQVLPALPQVVCNVR 60
QY 62 DVRFESIRLPGCRPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFQDSSS 121
DB 61 DVRFESIRLPGCRPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFQDSSS 120
QY 122 SKAPPPSLPSRLPGPSDT 141
DB 121 SKAPPPSLPSRLPGPSDT 140

US-08-425-673-2
RESULT 17
US-08-425-673-2
Sequence 2, Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
TITLE OF INVENTION: Methods for Receptor Binding Specificity and Activity and
TITLE OF INVENTION: Methods for Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Richard R. Muccino
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA
ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5" floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Richard R.
REGISTRATION NUMBER: 12 538
TELECOMMUNICATION INFORMATION:
REFERENCE/DOCKET NUMBER: UND 1.0-004
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 145 amino acids
TYPE: amino acid

TOPOLOGY: linear
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO
US-08-425-673-2
Query Match 98.3%; Score 764; DB 1; Length 145;
Best Local Similarity 99.3%; Pred. No. 4.9e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTWVQLQVLPALPQVVCNVR 61
DB 1 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTWVQLQVLPALPQVVCNVR 60
QY 62 DVRFESIRLPGCRPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFQDSSS 121
DB 61 DVRFESIRLPGCRPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFQDSSS 120
QY 122 SKAPPPSLPSRLPGPSDT 141
DB 121 SKAPPPSLPSRLPGPSDT 140

US-08-298-1898-1
Sequence 1, Application US/082981898
Patent No. 5674727

GENERAL INFORMATION:
APPLICANT: Dr. Laurence A. Cole and Dr. Andrew Kardana
TITLE OF INVENTION: NO. 5674727el Methods for Detecting Reproductive
TITLE OF INVENTION: Cancers of Tumors and Assay Products
TITLE OF INVENTION: Therefor
NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
ADDRESSEE: Dr. Laurence A. Cole, c/o Dept. of Obstetrics and
STREET: 333 Cedar Street
CITY: New Haven
STATE: Connecticut
COUNTRY: USA
ZIP: 06510
COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5" diskette
COMPUTER: IBM PC compatible
OPERATING SYSTEM: Windows 95
SOFTWARE: Microsoft Word 7.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/298,1898
FILING DATE: 08/31/94
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Brian D. Voyce
REGISTRATION NUMBER: 28,917
TELECOMMUNICATION INFORMATION:
TELEPHONE: 919-638-1939 or 803-272-1471
TELEFAX: 919-638-1939 or 803-272-1471
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 145 amino acids
TYPE: amino acid
STRANDEDNESS: Unknown
TOPOLOGY: Unknown
MOLECULE TYPE: Subunit of hormone, specifically the
MOLECULE TYPE: beta subunit of hCG
SOURCE: Human urine
FEATURE:
NAME/KEY: beta subunit of hCG that is nicked by CBNE
LOCATION: NCG
IDENTIFICATION METHOD: N-terminal sequence analysis
PUBLICATION INFORMATION:
AUTHORS: Keutmann et alia
TITLE: "A Receptor-binding Region in Human
JOURNAL: proc Nat'l Acad Sci USA

VOLUME: 84
ISSUE: NO. 5674727 applicable
PAGES: 2038-2042
DATE: 1987
US-08-298-1898-1

Query Match 98.3%; Score 764; DB 1; Length 145;
Best Local Similarity 98.6%; Pred. No. 4.9e-66;
Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTTRVLQGLPALPOVVCNRYR 61
DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTTRVLQGLPALPOVVCNRYR 60
QY 62 DVFESIRLPCGPRGVNPNVSYAVALSQCALCRSTTDCGGPKDHPHLCDDPRFDDSS 121
DB 61 DVFESIRLPCGPRGVNPNVSYAVALSQCALCRSTTDCGGPKDHPHLCDDPRFDDSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 19
US-08-918-288-36

: Sequence 36, Application US/08918288
: Patent No. 6238890
: GENERAL INFORMATION:
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: NUMBER OF SEQUENCES: 83
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: OPERATING SYSTEM: DOS
: SOFTWARE: FASTSEQ for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/918,288
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 09/282,357
: FILING DATE:
: APPLICATION NUMBER: 08/853,524
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-FEB-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: Murashige, Kate H
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: TELEX:
: INFORMATION FOR SEQ ID NO: 36:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 181 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: FRAGMENT TYPE: Internal
: US-08-918-288-36

Query Match 98.3%; Score 764; DB 4; Length 181;
Best Local Similarity 99.3%; Pred. No. 6.3e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTTRVLQGLPALPOVVCNRYR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTTRVLQGLPALPOVVCNRYR 80
QY 62 DVFESIRLPCGPRGVNPNVSYAVALSQCALCRSTTDCGGPKDHPHLCDDPRFDDSS 121
DB 81 DVFESIRLPCGPRGVNPNVSYAVALSQCALCRSTTDCGGPKDHPHLCDDPRFDDSS 140
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 141 SKAPPSLPSPSLRPGSDT 160

RESULT 20

US-09-282-357-36
: Sequence 36, Application US/09282357
: Patent No. 6242580
: GENERAL INFORMATION:
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: NUMBER OF SEQUENCES: 83
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: OPERATING SYSTEM: DOS
: SOFTWARE: FASTSEQ for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/09/282,357
: FILING DATE:
: CLASSIFICATION: 536
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/918,288
: FILING DATE: 25 AUG-1997
: APPLICATION NUMBER: 08/853,524
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-FEB-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: Murashige, Kate H
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: TELEX:
: INFORMATION FOR SEQ ID NO: 36:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 181 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: FRAGMENT TYPE: Internal
: US-09-282-357-36

Query Match 98.3%; Score 764; DB 4; Length 181;
Best Local Similarity 99.3%; Pred. No. 6.3e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```

QY 2 SKEPLRPRLPCPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLOGVLPALPOVCNVR 61
DB 21 SKEPLRPRLPCPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLOGVLPALPOVCNVR 80
QY 62 DVRFESTRLPGCPRGVNPVSYAVALSCCALCRRTTDCGGFKDHPLTCDPDRFQSSS 121
DB 81 DVRFESTRLPGCPRGVNPVSYAVALSCCALCRRTTDCGGFKDHPLTCDPDRFQSSS 140
QY 122 SKAPPSLPSRPLPGPSDT 141
DB 141 SKAPPSLPSRPLPGPSDT 160

RESULT 21
US-09-142-320-16
: Sequence 16, Application US/09142320
: Patent No. 6194154
: GENERAL INFORMATION:
: APPLICANT: Bellet, Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Vidaud, Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION
: FILE REFERENCE: 065691/0140
: CURRENT APPLICATION NUMBER: US/09/142,320
: EARLIER APPLICATION NUMBER: PCT/FR97/00361
: EARLIER FILING DATE: 1997-02-28
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24
: SOFTWARE: Patentin Ver. 2.0
: SEQ ID NO 16
: LENGTH: 145
: TYPE: PCT
: ORGANISM: human
US-09-142-320-16

Query Match          98.1%; Score 762; DB 4; Length 145;
Best Local Similarity 99.3%; Pred. No. 7.6e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps

QY 2 SKEPLRPRLPCPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLOGVLPALPOVCNVR 61
DB 21 SKEPLRPRLPCPNATLAVKEGCPVCITVNTTICAGYCPMTNRVLOGVLPALPOVCNVR 60
QY 62 DVRFESTRLPGCPRGVNPVSYAVALSCCALCRRTTDCGGFKDHPLTCDPDRFQSSS 121
DB 61 DVRFESTRLPGCPRGVNPVSYAVALSCCALCRRTTDCGGFKDHPLTCDPDRFQSSS 120
QY 122 SKAPPSLPSRPLPGPSDT 141
DB 121 SKAPPSLPSRPLPGPSDT 140

RESULT 22
US-09-142-320-11
: Sequence 11, Application US/09142320
: Patent No. 6194154
: GENERAL INFORMATION:
: APPLICANT: Bellet, Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION
: FILE REFERENCE: 065691/0140
: CURRENT APPLICATION NUMBER: US/09/142,320
: EARLIER FILING DATE: 1998-09-04
: EARLIER FILING DATE: 1997-02-28
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24

```

```

; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 11
; LENGTH: 145
; TYPE: PRT
; ORGANISM: human
US-09-142-320-11

Query Match          96.5%; Score 750; DB 4; Length 145;
Best Local Similarity 97.9%; Pred. No. 1,1e-64;
Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0

QY      2  SKEPLPRCPRIINATLAVEKECPCWICVTNTTICAGTCPTMTRVIGQVLPAIPQVVCNRY 61
Db      1  SKEMLPRCPRIINATLAVEKESPCVICVTNTTICAGTCPTMTRVIGQVLPAIPQVVCNRY 60

QY      62  DVFRESIRLPGCPGPNVNVYVAVALSCQALCRSTTDCGGPKDHPILCTCDPRFQSSS 121
Db      61  DVFRESIRLPGCPGPNVNVYVAVALSCQALCRSTTDCGGPKDHPILCTCDPRFQSSS 120

QY      122  SKAPPSLPSPSLPGSDT 141
Db      121  SKAPPSLPSPSLPGSDT 140

RESULT 23
US-09-142-320-4
; Sequence 4, Application US/09142320
; Patent No. 6,811,764
; GENERAL INFORMATION:
; APPLICANT: Bellet, Dominique
; APPLICANT: Bidart, Jean-Michel
; APPLICANT: Vidaud, Michel
; APPLICANT: Lazar, Vladimir
; TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION DETECTION METHOD
; CURRENT APPLICATION NUMBER: 065691/0140
; CURRENT FILING DATE: 1998-09-04
; EARLIER FILING DATE: 1998-09-04
; EARLIER FILING DATE: 1997-02-28
; EARLIER APPLICATION NUMBER: FR 96 02683
; EARLIER FILING DATE: 1996-03-04
; NUMBER OF SEQ ID NOS: 24
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 4
; LENGTH: 145
; TYPE: PRT
; ORGANISM: human
; FEATURE: FEATURE
; FEATURE INFORMATION: consensus sequence
; OTHER INFORMATION: Xaa at position 2 is a Lys or Arg
; FEATURE:
; OTHER INFORMATION: Xaa at position 4 is a Pro or Met
; FEATURE:
; OTHER INFORMATION: Xaa at position 117 is an Ala or Asp
US-09-142-320-4

Query Match          96.3%; Score 748; DB 4; Length 145;
Best Local Similarity 97.9%; Pred. No. 1,7e-64;
Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0

QY      2  SKEPLPRCPRIINATLAVEKECPCWICVTNTTICAGTCPTMTRVIGQVLPAIPQVVCNRY 61
Db      1  SXEMLPRCPRIINATLAVEKECPCWICVTNTTICAGTCPTMTRVIGQVLPAIPQVVCNRY 60

QY      62  DVFRESIRLPGCPGPNVNVYVAVALSCQALCRSTTDCGGPKDHPILCTCDPRFQSSS 121
Db      61  DVFRESIRLPGCPGPNVNVYVAVALSCQALCRSTTDCGGPKDHPILCTCDPRFQSSS 120

QY      122  SKAPPSLPSPSLPGSDT 141
Db      121  SKAPPSLPSPSLPGSDT 140

```

RESULT 24
US-08-425-673-10
; Sequence 10, Application US/08425673
; Patent No. 6194177
; GENERAL INFORMATION:
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; ZIP: 08551
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/425,673
; FILING DATE: 18 JUN 1991
; PRIORITY INFORMATION:
; PRIOR APPLICATION NUMBER: US 07/717,151
; FILING DATE: 18 JUN 1991
; NAME: Muccino, Richard R.
; ATTORNEY/AGENT INFORMATION:
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UND 1.0-004
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760
; INFORMATION FOR SEQ ID NO: 10:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 145 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; HYPOTHETICAL: NO
; ANTI-SENSE: NO
US-08-425-673-10
Query Match 95.6%; Score 743; DB 1: Length 145;
; Identical Similarity 96.4%; 1 red
; Mismatches 135; Conservative 1; Indels 0; Gaps 0;
OY 2 SKEPLRPRCRINATLAVKEGCPVITVTTCAGTCPTMTVRVLCGLPALPQVVCNVR 61
DB 1 SKEPLRPRCRINATLAVKEGCPVITVTTCAGTCPTMTVRVLCGLPALPQVVCNVR 60
OY 62 DVFESIRLPCGPRGVNPNVSTAVALSOCALCRSTTDCGGPKDHPDLTCDPRFQDSSS 121
DB 61 DVFESIRLPCGPRGVNPNVSTAVALSOCALCRSTTDCGGPKDHPDLTCDPRFQDSSS 120
OY 122 SKAPPSRLPSRLGPSDT 141
DB 121 SKAPPSRLPSRLGPSDT 140
RESULT 25
US-08-804-166-4
; Sequence 4, Application US/08804166
; Patent No. 6193972
; GENERAL INFORMATION:
; APPLICANT: Campbell, Robert K.
; APPLICANT: Jameson, Bradford A.
; TITLE OF INVENTION: HYBRID PROTEINS
; NUMBER OF SEQUENCES: 22
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: BROWDY AND NEIMARK
; STREET: 419 Seventh Street N.W., Ste. 300
; CITY: Washington
; STATE: D.C.
; COUNTRY: USA
; ZIP: 22207
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk

; TITLE OF INVENTION: HYBRID PROTEINS
; NUMBER OF SEQUENCES: 22
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: BROWDY AND NEIMARK
; STREET: 419 Seventh Street N.W., Ste. 300
; CITY: Washington
; STATE: D.C.
; COUNTRY: USA
; ZIP: 22207
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/804,166
; FILING DATE:
; PRIORITY INFORMATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 60/011,936
; FILING DATE: 20 February 1996
; CLASSIFICATION:
; ATTORNEY/AGENT INFORMATION:
; NAME: Browdy, Roger L.
; REGISTRATION NUMBER: 25,618
; REFERENCE/DOCKET NUMBER: CAMPBELL-2A
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (702) 924-2197
; TELEFAX: (702) 713-5218
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 307 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-804-166-4
Query Match 95.2%; Score 740; DB 4: Length 307;
; Identical Similarity 100.0%; 0 red
; Mismatches 134; Conservative 0; Indels 0; Gaps 0;
OY 8 PCRPRINATLAVKEGCPVITVTTCAGTCPTMTVRVLCGLPALPQVVCNVRDVFES 67
DB 169 PCRPRINATLAVKEGCPVITVTTCAGTCPTMTVRVLCGLPALPQVVCNVRDVFES 228
OY 68 IRUPGCPRGVNPVSTAVALSOCALCRSTTDCGGPKDHPDLTCDPRFQDSSSSKAPPP 127
DB 229 IRUPGCPRGVNPVSTAVALSOCALCRSTTDCGGPKDHPDLTCDPRFQDSSSSKAPPP 288
OY 128 SKAPPSRLPSRLGPSDT 141
DB 289 SKAPPSRLPSRLGPSDT 302
RESULT 26
US-08-910-991-4
; Sequence 4, Application US/08910991
; Patent No. 6194177
; GENERAL INFORMATION:
; APPLICANT: Campbell, Robert K.
; APPLICANT: Jameson, Bradford A.
; APPLICANT: Chappel, Scott C.
; TITLE OF INVENTION: HYBRID PROTEINS
; NUMBER OF SEQUENCES: 22
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: BROWDY AND NEIMARK
; STREET: 419 Seventh Street N.W., Ste. 300
; CITY: Washington
; STATE: D.C.
; COUNTRY: USA
; ZIP: 22207
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk

```
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/910,991
FILING DATE: 20 February 1996
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Brown, Roger L.
REGISTRATION NUMBER: 35,618
REFERENCE/DOCKET NUMBER: CAMPBELL-2A
TELEPHONE: (202) 628-5197
TELEFAX: (202) 737-3528
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 307 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-910-991-4

Query Match
Best Local Similarity 100.0% Pos. No. 2,2e-63;
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PCRPNATLAVKEGCPVCITVNTTICAGYCTMTRVLGQVLPALPQVVCNRYDVFES 67
DB 169 PCRPNATLAVKEGCPVCITVNTTICAGYCTMTRVLGQVLPALPQVVCNRYDVFES 228
QY 68 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDHPHLCDDPRFQDSSSKAPPP 127
DB 229 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDHPHLCDDPRFQDSSSKAPPP 288
QY 128 SLPSPSLRPGSDT 141
DB 289 SLPSPSLRPGSDT 302

RESULT 27
US-08-804-166-8
Sequence 8, Application US/08804166
Patent No. 6193972
GENERAL INFORMATION:
APPLICANT: Campbell, Robert K.
APPLICANT: Campbell, Robert A.
APPLICANT: Campbell, Scott C.
TITLE OF INVENTION: HYBRID PROTEINS
NUMBER OF SEQUENCES: 22
CORRESPONDENCE ADDRESS:
ADDRESSEE: BROWDY AND NEIMARK
STREET: 419 Seventh Street N.W., Ste. 300
CITY: Washington
STATE: D.C.
COUNTRY: USA
ZIP: 22207
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/804,166
FILING DATE: 20 February 1996
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/804,166
FILING DATE: 20 February 1997
PROSECUTION DATA:
APPLICATION NUMBER: 60/011,936
FILING DATE: 20 February 1996
ATTORNEY/AGENT INFORMATION:
NAME: YUN, Allen C.
REGISTRATION NUMBER: 37,971
REFERENCE/DOCKET NUMBER: CAMPBELL-2B
TELEPHONE: (202) 628-5197
TELEFAX: (202) 737-3528
PRIOR APPLICATION NUMBER: 60/011,936
```

```
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/910,991
FILING DATE: 20 February 1996
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Brown, Roger L.
REGISTRATION NUMBER: 35,618
REFERENCE/DOCKET NUMBER: CAMPBELL-2A
TELEPHONE: (202) 628-5197
TELEFAX: (202) 737-3528
INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 336 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-804-166-8

Query Match
Best Local Similarity 100.0% Pos. No. 2,5e-63;
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PCRPNATLAVKEGCPVCITVNTTICAGYCTMTRVLGQVLPALPQVVCNRYDVFES 67
DB 198 PCRPNATLAVKEGCPVCITVNTTICAGYCTMTRVLGQVLPALPQVVCNRYDVFES 257
QY 68 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDHPHLCDDPRFQDSSSKAPPP 127
DB 238 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDHPHLCDDPRFQDSSSKAPPP 317
QY 128 SLPSPSLRPGSDT 141
DB 318 SLPSPSLRPGSDT 331

RESULT 28
US-08-910-991-8
Sequence 8, Application US/08910991
Patent No. 6194177
GENERAL INFORMATION:
APPLICANT: Campbell, Robert K.
APPLICANT: Campbell, Robert A.
APPLICANT: Campbell, Scott C.
TITLE OF INVENTION: HYBRID PROTEINS
NUMBER OF SEQUENCES: 22
CORRESPONDENCE ADDRESS:
ADDRESSEE: BROWDY AND NEIMARK
STREET: 419 Seventh Street N.W., Ste. 300
CITY: Washington
STATE: D.C.
COUNTRY: USA
ZIP: 22207
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/910,991
FILING DATE: 20 February 1996
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/804,166
FILING DATE: 20 February 1997
PROSECUTION DATA:
APPLICATION NUMBER: 60/011,936
FILING DATE: 20 February 1996
ATTORNEY/AGENT INFORMATION:
NAME: YUN, Allen C.
REGISTRATION NUMBER: 37,971
REFERENCE/DOCKET NUMBER: CAMPBELL-2B
TELEPHONE: (202) 628-5197
TELEFAX: (202) 737-3528
```


INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 336 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-910-991-6

Query Match 95.2%; Score 740; DB 4; Length 336;
Best Local Similarity 100.0%; Pred. No. 2.5e-63;
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PCRPNATLAVKEGCPVCTVNTTICAGTCPTMTVRVLOGVLPALPQVVCNRYDVRFS 67
DB 198 PCRPNATLAVKEGCPVCTVNTTICAGTCPTMTVRVLOGVLPALPQVVCNRYDVRFS 257
QY 68 IRLPCRGVNPVYVAVALSQCACALCRSTTDCGPKDHPLTCDPRFQSSSKAPPP 127
DB 258 IRLPCRGVNPVYVAVALSQCACALCRSTTDCGPKDHPLTCDPRFQSSSKAPPP 317
QY 128 SLSPSRLPQSDT 141
DB 318 SLSPSRLPQSDT 331

RESULT 29
US-08-918-288-6
Sequence 6, Application US/08918288
Patent No. 6242580
GENERAL INFORMATION:

APPLICANT: BOIME, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/918,288
CLASSIFICATION:

PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:

INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 234 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein

FRAGMENT TYPE: Internal
US-08-918-288-6

Query Match 83.4%; Score 648; DB 4; Length 234;
Best Local Similarity 95.2%; Pred. No. 1e-54;
Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEDPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 61
DB 21 SKEDPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 80
QY 62 DVRESIRLPCGPRGVNPVYVAVALSQCACALCRSTTDCGPKDHPLTCDPRFQSSSS 121
DB 81 DVRESIRLPCGPRGVNPVYVAVALSQCACALCRSTTDCGPKDHPLTCDPRFQSSSS 140
QY 122 SKAP 125
DB 141 USNP 144

RESULT 30

US-09-282-357-6
Sequence 6, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:

APPLICANT: BOIME, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE:

CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:

INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 234 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-09-282-357-6

Query Match 95.2%; Score 648; DB 4; Length 234;
Best Local Similarity 95.2%; Pred. No. 1e-54;

Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61
 DB 21 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 80
 OY 63 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 121
 DB 81 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 140
 OY 122 SKAP 125
 DB 141 GSAP 144

RESULT 31

US-08-918-288-69 : Sequence 69, Application US/08918288
 : Patent No. 6242580
 : GENERAL INFORMATION:
 : APPLICANT: BOIME, Irving
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
 : NUMBER OF SEQUENCES: 83
 : CORRESPONDENCE ADDRESS:
 : ADDRESSEE: MORRISON & FOERSTER
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500
 : CITY: Washington
 : STATE: DC
 : COUNTRY: USA
 : ZIP: 20006-1888
 : COMPUTER READABLE FORM:
 : MEDIUM TYPE: Diskette
 : COMPUTER: IBM Compatible
 : OPERATING SYSTEM: DOS
 : SOFTWARE: FASTSEQ for Windows Version 2.0
 : CURRENT APPLICATION DATA:
 : FILING DATE: 09/08/918,288
 : PRIORITY NUMBER: 09/08/918,288
 : CLASSIFICATION:
 : PRIOR APPLICATION DATA:
 : APPLICATION NUMBER: 09/282,357
 : FILING DATE:
 : APPLICATION NUMBER: 08/853,524
 : FILING DATE: 09-MAY-1997
 : APPLICATION NUMBER: 08/199,382
 : FILING DATE: 18-FEB-1994
 : ATTORNEY/AGENT INFORMATION:
 : NAME: Murashige, Kate H
 : REGISTRATION NUMBER: 29,959
 : REFERENCE/DOCKET NUMBER: 29500-20050.25
 : TELECOMMUNICATION INFORMATION:
 : TELEPHONE: 202-887-1500
 : TELEFAX: 202-887-0763
 : TELEX:
 : INFORMATION FOR SEQ ID NO: 69:
 : SEQUENCE CHARACTERISTICS:
 : LENGTH: 114 amino acids
 : TYPE: amino acid
 : STRANDEDNESS: single
 : TOPOLOGY: linear
 : US-08-918-288-69

Query Match 81.5%; Score 633; DB 4; Length 114;
 Best Local Similarity 100.0%; Pred. No. 1.2e-53;
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60
 OY 62 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 115

0;

DB 61

DB 61 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 114

RESULT 32

US-09-282-357-69 : Sequence 69, Application US/09282357
 : Patent No. 6242580
 : GENERAL INFORMATION:
 : APPLICANT: BOIME, Irving
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
 : NUMBER OF SEQUENCES: 83
 : CORRESPONDENCE ADDRESS:
 : ADDRESSEE: MORRISON & FOERSTER
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500
 : CITY: Washington
 : STATE: DC
 : COUNTRY: USA
 : ZIP: 20006-1888
 : COMPUTER READABLE FORM:
 : MEDIUM TYPE: Diskette
 : COMPUTER: IBM Compatible
 : OPERATING SYSTEM: DOS
 : SOFTWARE: FASTSEQ for Windows Version 2.0
 : CURRENT APPLICATION DATA:
 : APPLICATION NUMBER: US/09/282,357
 : FILING DATE:
 : CLASSIFICATION: 536
 : PRIOR APPLICATION DATA:
 : APPLICATION NUMBER: 08/918,288
 : FILING DATE: 25 AUG-1997
 : APPLICATION NUMBER: 08/853,524
 : FILING DATE: 09-MAY-1997
 : APPLICATION NUMBER: 08/199,382
 : FILING DATE: 18-FEB-1994
 : ATTORNEY/AGENT INFORMATION:
 : NAME: Murashige, Kate H
 : REGISTRATION NUMBER: 29,959
 : REFERENCE/DOCKET NUMBER: 29500-20050.25
 : TELECOMMUNICATION INFORMATION:
 : TELEPHONE: 202-887-1500
 : TELEFAX: 202-887-0763
 : TELEX:
 : INFORMATION FOR SEQ ID NO: 69:
 : SEQUENCE CHARACTERISTICS:
 : LENGTH: 114 amino acids
 : TYPE: amino acid
 : STRANDEDNESS: single
 : TOPOLOGY: linear
 : US-09-282-357-69

Query Match 81.5%; Score 633; DB 4; Length 114;
 Best Local Similarity 100.0%; Pred. No. 1.2e-53;
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60
 OY 63 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 115
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSCOCALCRSTTDCGGPKDHPDLTCDDPR 114

RESULT 33

US-08-918-288-24 : Sequence 24, Application US/08918288
 : Patent No. 6238890
 : GENERAL INFORMATION:
 : APPLICANT: BOIME, Irving
 : APPLICANT: MOYLE, William R.

;; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
;; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
;; NUMBER OF SEQUENCES: 83
;; CORRESPONDENCE ADDRESS:
;; ADDRESSEE: MORRISON & FOERSTER
;; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
;; CITY: Washington
;; STATE: DC
;; COUNTRY: USA
;; ZIP: 20006-1888
;; COMPUTER READABLE FORM:
;; MEDIUM TYPE: Diskette
;; COMPUTER: IBM Compatible
;; OPERATING SYSTEM: DOS
;; SOFTWARE: FASTSEQ for Windows Version 2.0
;; CURRENT APPLICATION DATA:
;; APPLICATION NUMBER: US/08/918,288
;; FILING DATE: 09-08-1997
;; CLASSIFICATION:
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: 09/282,357
;; FILING DATE:
;; APPLICATION NUMBER: 08/853,524
;; FILING DATE: 09-MAY-1997
;; APPLICATION NUMBER: 08/199,382
;; FILING DATE: 18-FEB-1994
;; ATTORNEY/AGENT INFORMATION:
;; NAME: Murashige, Kate H.
;; REGISTRATION NUMBER: 29,959
;; REFERENCE/DOCKET NUMBER: 29500-20050.25
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: 202-887-1500
;; TELEFAX: 202-887-0763
;; TELEX:
;; INFORMATION FOR SEQ ID NO: 24:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 234 amino acids
;; TYPE: amino acid
;; STRANDEDNESS: single
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
;; FRAGMENT TYPE: internal
;; US-08-918-288-24

Query Match 74.9%; Score 582; DB 4; Length 234;
Best Local Similarity 88.7%; Pred. No. 2e-48;
Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVQLGVLPALPOVQVNCYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVQLGVLPALPOVQVNCYR 80
QY 62 DVRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCYVRLGPGSYCDPRGSGSGS 121
DB 81 DVRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCYVRLGPGSYCDPRGSGSGS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 34
US-09-282-357-24
Sequence 24, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER

;; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
;; CITY: Washington
;; STATE: DC
;; COUNTRY: USA
;; ZIP: 20006-1888
;; COMPUTER READABLE FORM:
;; MEDIUM TYPE: Diskette
;; COMPUTER: IBM Compatible
;; OPERATING SYSTEM: DOS
;; SOFTWARE: FASTSEQ for Windows Version 2.0
;; CURRENT APPLICATION DATA:
;; APPLICATION NUMBER: US/09/282,357
;; FILING DATE:
;; CLASSIFICATION: 536
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: 08/918,288
;; FILING DATE: 23-AUG-1997
;; APPLICATION NUMBER: 08/853,524
;; FILING DATE: 09-MAY-1997
;; APPLICATION NUMBER: 08/199,382
;; FILING DATE: 18-FEB-1994
;; ATTORNEY/AGENT INFORMATION:
;; NAME: Murashige, Kate H.
;; REGISTRATION NUMBER: 29,959
;; REFERENCE/DOCKET NUMBER: 29500-20050.25
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: 202-887-1500
;; TELEFAX: 202-887-0763
;; TELEX:
;; INFORMATION FOR SEQ ID NO: 24:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 234 amino acids
;; TYPE: amino acid
;; STRANDEDNESS: single
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
;; FRAGMENT TYPE: internal
;; US-09-282-357-24

Query Match 74.9%; Score 582; DB 4; Length 234;
Best Local Similarity 88.7%; Pred. No. 2e-48;
Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVQLGVLPALPOVQVNCYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTVRVQLGVLPALPOVQVNCYR 80
QY 62 DVRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCYVRLGPGSYCDPRGSGSGS 121
DB 81 DVRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCYVRLGPGSYCDPRGSGSGS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 35
US-08-425-673-9
Sequence 9, Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
APPLICANT: Campbell, Robert K.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
TITLE OF INVENTION: Receptor Binding Specificity and Activity and
TITLE OF INVENTION: Methods for Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Richard R. Muccino
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA

ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Richard R.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: UND 1.0-004
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 9:
SEQUENCE CHARACTERISTICS:
LENGTH: 114 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO
US-08-425-673-9

Query Match 73.2% Score 569; DB 1; Length 114;
Best Local Similarity 73.6% Pred. No. 1.6e-47;
Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPPTMTRVLGVLQVLPALPQVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPPTMTRVLGVLQVLPALPQVVCNTR 60

OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGGPKDHPHLC 111
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGGPKDHPHPSYC 110

RESULT 36
US-08-425-673-7
Sequence 7, Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Robert K.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: PC-DOS/MS-DOS
TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
TITLE OF INVENTION: Methods For Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESS: Richard R. Muccino
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA
ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991

ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Richard R.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: UND 1.0-004
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 7:
SEQUENCE CHARACTERISTICS:
LENGTH: 114 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO
US-08-425-673-7

Query Match 72.2% Score 561; DB 1; Length 114;
Best Local Similarity 72.1% Pred. No. 9.1e-47;
Matches 105; Conservative 0; Mismatches 9; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPPTMTRVLGVLQVLPALPQVVCNTR 61
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPPTMTRVLGVLQVLPALPQVVCNTR 60

OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGGPKDHPHLCDDPR 115
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGVGLGSPYCDPR 114

RESULT 37
US-08-918-288-9
Sequence 9, Application US/08918288
Patent No. 6238890
GENERAL INFORMATION:
APPLICANT: Boime, Irving
ATTORNEY/AGENT INFORMATION:
NAME: Moyle, William R.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESS: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
OPERATING SYSTEM: DOS
SOFTWARE: FastISO for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/918,288
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Kate H.
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 9:
SEQUENCE CHARACTERISTICS:

LENGTH: 234 amino acids
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: internal
US-08-918-288-9

Query Match 71.9%; Score 559; DB 4; Length 234;
Best Local Similarity 81.5%; Pred. No. 3.2e-46;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

OY 2 SKEPLRCPINATLAVEKGGPCVITVNTTICAGYCTMTVRVQLGVLPAQVWCVNR 61

DB 21 SREPLRCPINATLAVEKGGPCVITVNTTICAGYCTMTVRVQLGVLPAQVWCVNR 80

OY 62 DYRFESIRLPGCPGVDPVVPVAVLSCQALCRSTTDCGPKDHPHLCDDPREFODSSS 121

DB 81 DYRFESIRLPGCPGVDPVVPVAVLSCQALCRSTTDCGPKDHPHLCDDPREFODSSS 140

OY 122 SKAP 125

DB 141 GSAP 144

RESULT 38

US-09-282-357-9

Sequence 9, Application US/09282357

Patent No. 6242580

GENERAL INFORMATION:

APPLICANT: BOYLE, Irving

TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE

NUMBER OF SEQUENCES: 83

CORRESPONDENCE ADDRESS:

STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington

STATE: DC

COUNTRY: USA

ZIP: 20006-1888

COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette

OPERATING SYSTEM: DOS

SOFTWARE: FASTSEQ for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/09/282,357

FILING DATE:

CLASSIFICATION: 536

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 08/918,288

FILING DATE: 25 AUG-1997

APPLICATION NUMBER: 08/853,524

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/199,382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murashige, Kate H

REGISTRATION NUMBER: 29,959

REFERENCE/DOCKET NUMBER: 29500-20050.25

TELEPHONE: 202-887-1500

TELEFAX: 202-887-0763

TELEX:

INFORMATION FOR SEQ ID NO: 9:

SEQUENCE CHARACTERISTICS:

LENGTH: 234 amino acids

TYPE: amino acid

STRANDEDNESS: single

TOPOLOGY: linear

MOLECULE TYPE: protein

FRAGMENT TYPE: internal
US-09-282-357-9

Query Match 71.9%; Score 559; DB 4; Length 234;
Best Local Similarity 81.5%; Pred. No. 3.2e-46;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

OY 2 SKEPLRCPINATLAVEKGGPCVITVNTTICAGYCTMTVRVQLGVLPAQVWCVNR 61

DB 21 SREPLRCPINATLAVEKGGPCVITVNTTICAGYCTMTVRVQLGVLPAQVWCVNR 80

OY 62 DYRFESIRLPGCPGVDPVVPVAVLSCQALCRSTTDCGPKDHPHLCDDPREFODSSS 121

DB 81 DYRFESIRLPGCPGVDPVVPVAVLSCQALCRSTTDCGPKDHPHLCDDPREFODSSS 140

OY 122 SKAP 125

DB 141 GSAP 144

RESULT 39

US-08-918-288-21

Sequence 21, Application US/08918288

Patent No. 6238890

GENERAL INFORMATION:

APPLICANT: BOYLE, William R.

TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE

NUMBER OF SEQUENCES: 83

CORRESPONDENCE ADDRESS:

STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington

STATE: DC

COUNTRY: USA

ZIP: 20006-1888

COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette

OPERATING SYSTEM: DOS

SOFTWARE: FASTSEQ for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/918,288

FILING DATE:

CLASSIFICATION:

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 09/282,357

FILING DATE: 08/853,524

APPLICATION NUMBER: 08/199,382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murashige, Kate H

REGISTRATION NUMBER: 29,959

REFERENCE/DOCKET NUMBER: 29500-20050.25

TELEPHONE: 202-887-1500

TELEFAX: 202-887-0763

TELEX:

INFORMATION FOR SEQ ID NO: 21:

SEQUENCE CHARACTERISTICS:

LENGTH: 234 amino acids

TYPE: amino acid

STRANDEDNESS: single

TOPOLOGY: linear

MOLECULE TYPE: protein

FRAGMENT TYPE: internal

US-08-918-288-21

Query Match 71.2%; Score 553; DB 4; Length 234;
Best Local Similarity 85.5%; Pred. No. 1.2e-45;

Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 61
 DB 21 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 80
 QY 62 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 121
 DB 81 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 140
 QY 122 SKAP 125
 DB 141 GSAP 144

RESULT 40

US-09-282-357-21
 : Sequence 41, Application US/09282357
 : Patent No. 6242560
 : GENERAL INFORMATION:

: APPLICANT: BOIME, Irving
 : APPLICANT: MOYLE, William R.
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
 : NUMBER OF SEQUENCES: 83
 : CORRESPONDENCE ADDRESS:
 : ADDRESS: MORRISON & FOERSTER
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500
 : CITY: Washington
 : STATE: DC
 : COUNTRY: USA
 : ZIP: 20006-1888
 : COMPUTER READABLE FORM:
 : MEDIUM TYPE: Diskette
 : COMPUTER: IBM Compatible
 : OPERATING SYSTEM: DOS
 : SOFTWARE: FASTSEQ for Windows Version 2.0
 : CURRENT APPLICATION DATA:
 : APPLICATION NUMBER: US/09/282,357
 : FILING DATE: 05/09/282,357
 : CLASSIFICATION: 536
 : PRIOR APPLICATION DATA:
 : APPLICATION NUMBER: 08/918,288
 : FILING DATE: 25 AUG-1997
 : APPLICATION NUMBER: 08/853,524
 : FILING DATE: 09-MAY-1997
 : APPLICATION NUMBER: 08/199,382
 : FILING DATE: 18-FEB-1994
 : ATTORNEY/AGENT INFORMATION:
 : NAME: Nutashise, Kate H
 : REGISTRATION NUMBER: 29,959
 : REFERENCE/DOCKET NUMBER: 29500-20050.25
 : TELECOMMUNICATION INFORMATION:
 : TELEPHONE: 202-887-1500
 : TELEFAX: 202-887-0763
 : TELEX:
 : INFORMATION FOR SEQ ID NO: 21:
 : SEQUENCE CHARACTERISTICS:
 : LENGTH: 234 amino acids
 : TYPE: amino acid
 : STRANDEDNESS: single
 : TOPOLOGY: linear
 : MOLECULE TYPE: protein
 : FRAGMENT TYPE: internal
 : US-09-282-357-21

Query Match 71.2%; Score 553; DB 4; Length 234;
 Best Local Similarity 85.5%; Pred. No. 1.2e-45;
 Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 61
 DB 21 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 80

0;

QY 62 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 121
 DB 81 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 140
 QY 122 SKAP 125
 DB 141 GSAP 144

RESULT 41

US-08-918-288-18
 : Sequence 18, Application US/08918288
 : Patent No. 6238890
 : GENERAL INFORMATION:

: APPLICANT: BOIME, Irving
 : APPLICANT: MOYLE, William R.
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
 : NUMBER OF SEQUENCES: 83
 : CORRESPONDENCE ADDRESS:
 : ADDRESS: MORRISON & FOERSTER
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500
 : CITY: Washington
 : STATE: DC
 : COUNTRY: USA
 : ZIP: 20006-1888
 : COMPUTER READABLE FORM:
 : MEDIUM TYPE: Diskette
 : COMPUTER: IBM Compatible
 : OPERATING SYSTEM: DOS
 : SOFTWARE: FASTSEQ for Windows Version 2.0
 : CURRENT APPLICATION DATA:
 : APPLICATION NUMBER: US/08/918,288
 : FILING DATE:
 : CLASSIFICATION:
 : PRIOR APPLICATION DATA:
 : APPLICATION NUMBER: 09/282,357
 : FILING DATE: 08/918,288
 : APPLICATION NUMBER: 08/853,524
 : FILING DATE: 09-MAY-1997
 : APPLICATION NUMBER: 08/199,382
 : FILING DATE: 18-FEB-1994
 : ATTORNEY/AGENT INFORMATION:
 : NAME: Nutashise, Kate H
 : REGISTRATION NUMBER: 29,959
 : REFERENCE/DOCKET NUMBER: 29500-20050.25
 : TELECOMMUNICATION INFORMATION:
 : TELEPHONE: 202-887-1500
 : TELEFAX: 202-887-0763
 : INFORMATION FOR SEQ ID NO: 18:
 : SEQUENCE CHARACTERISTICS:
 : LENGTH: 237 amino acids
 : TYPE: amino acid
 : STRANDEDNESS: single
 : TOPOLOGY: linear
 : MOLECULE TYPE: protein
 : FRAGMENT TYPE: internal
 : US-08-918-288-18

Query Match 70.7%; Score 549; DB 4; Length 237;
 Best Local Similarity 86.0%; Pred. No. 2.9e-45;
 Matches 104; Conservative 2; Mismatches 15; Indels 0; Gaps 0;

QY 2 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 61
 DB 21 SKEPLPRCRPNTATLAVKEGCPVCITVNTTICAGYCPMTMRVLOGVLPALPQVVCNVR 80

QY 62 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 121
 DB 81 DVRFESIRLPGCGPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 140

```
QY 122 S 122
Db 141 S 141

RESULT 42
US-09-282-357-18
: Sequence 18, Application US/09282357
: Patent No. 6242580
: GENERAL INFORMATION:
: APPLICANT: BOIME, Irving
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 83
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: COMPUTER: IBM Compatible
: OPERATING SYSTEM: DOS
: SOFTWARE: FastSeq for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/09282,357
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 536
: FILING DATE:
: APPLICATION NUMBER: 08/918,288
: FILING DATE: 25 AUG-1997
: APPLICATION NUMBER: 08/853,524
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-FEB-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: Murashige, Kate H
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: TELEX:
: INFORMATION FOR SEQ ID NO: 18:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 114 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: FRAGMENT TYPE: internal
US-09-282-357-18

Query Match
Best Local Similarity 86.0%; Score 549; DB 4; Length 237;
Matches 104; Conservative 2; Mismatches 15; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPTNATLAVEKEGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCYWR 61
Db 21 SKEPLRRCRPTNATLAVEKEGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCYWR 80

QY 62 DVRESIRLPGCPRGVNPVSVYAVALSOCALCRSTTDCGPKDHPKPLTCDPREFODSSS 121
Db 81 DVRESIRLPGCPRGVNPVSVYAVALSOCALCRSTTDCGPKDHPKPLTCDPREFODSSS 140

QY 122 S 122
Db 141 S 141
```

```
RESULT 43
US-08-918-288-71
: Sequence 71, Application US/08918288
: Patent No. 6238890
: GENERAL INFORMATION:
: APPLICANT: BOIME, Irving
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 83
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: COMPUTER: IBM Compatible
: OPERATING SYSTEM: DOS
: SOFTWARE: FastSeq for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/918,288
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 09/282,357
: FILING DATE:
: APPLICATION NUMBER: 08/853,524
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-FEB-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: Murashige, Kate H
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: TELEX:
: INFORMATION FOR SEQ ID NO: 71:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 114 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
US-08-918-288-71

Query Match
Best Local Similarity 70.0%; Score 544; DB 4; Length 114;
Matches 97; Conservative 6; Mismatches 11; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPTNATLAVEKEGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCYWR 61
Db 1 SKEPLRRCRPTNATLAVEKEGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCYWR 60

QY 62 DVRESIRLPGCPRGVNPVSVYAVALSOCALCRSTTDCGPKDHPKPLTCDPREFODSSS 115
Db 61 DVRESIRLPGCPRGVNPVSVYAVALSOCALCRSTTDCGPKDHPKPLTCDPREFODSSS 114

RESULT 44
US-09-282-357-71
: Sequence 71, Application US/09282357
: Patent No. 6242580
: GENERAL INFORMATION:
: APPLICANT: BOIME, Irving
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 83
: CORRESPONDENCE ADDRESS:
```

ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888

COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette

OPERATING SYSTEM: DOS

SOFTWARE: FastSeq for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/09/282,357

FILING DATE:

CLASSIFICATION: 536

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 08/918,288

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/853,524

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/199,382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murrashige, Kate H

REGISTRATION NUMBER: 29,959

REFERENCE/DOCKET NUMBER: 29500-20050.25

TELECOMMUNICATION INFORMATION:

TELEPHONE: (202) 887-1300

TELEFAX: 202-887-0763

TELEX:

INFORMATION FOR SEQ ID NO: 71:

SEQUENCE CHARACTERISTICS:

LENGTH: 114 amino acids

TYPE: amino acid

STRANDEDNESS: single

TOPOLOGY: linear

US-09-282-357-71

Query Match
Best Local Similarity 70.08; Score 544; DB 4; Length 114;
Matches 97; Conservative 6; Mismatches 11; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCACGYCTPTMTVLQGLPALPQVVCYR 61

DB 1 SREPLRPMCHPINAIALAVKEGCPVCITVTTCACGYCTPTMTVLQGLPALPQVVCYR 60

OY 62 DVRESIRLPGCPGVNPVSVYAVALSQCQALCRRTTDCGGPKDHLTCDDER 115

DB 61 DVRESIRLPGCPGVNPVSVYAVALSQCQALCRRTTDCGGPKDHLTCDDHQ 114

RESULT 45

US-08-425-673-11

Sequence 11, Application US/08425673

Patent No. 5508261

GENERAL INFORMATION:

APPLICANT: Moyle, William R.

TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having

TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and

TITLE OF INVENTION: Methods For Preparing and Using Same

NUMBER OF SEQUENCES: 12

CORRESPONDENCE ADDRESS:

ADDRESSEE: Richard R. Muccino

STREET: P.O. Box 1267

CITY: Princeton

STATE: New Jersey

COUNTRY: USA

ZIP: 08551

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/425,673

FILING DATE:

CLASSIFICATION: 514

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/07/717,151

FILING DATE: 09-MAY-1997

ATTORNEY/AGENT INFORMATION:

NAME: Muccino, Richard R.

REGISTRATION NUMBER: 32,538

REFERENCE/DOCKET NUMBER: UMD 1.0-004

TELECOMMUNICATION INFORMATION:

TELEPHONE: (609) 466-3407

TELEFAX: (609) 466-2760

INFORMATION FOR SEQ ID NO: 11:

SEQUENCE CHARACTERISTICS:

LENGTH: 117 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLSCULE TYPE: peptide

HYPOTHETICAL: NO

ANTI-SENSE: NO

US-08-425-673-11

Query Match

Best Local Similarity 69.54; Score 540; DB 1; Length 117;

Matches 99; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCACGYCTPTMTVLQGLPALPQVVCYR 61

DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCACGYCTPTMTVLQGLPALPQVVCYR 60

OY 62 DVRESIRLPGCPGVNPVSVYAVALSQCQALCRRTTDC 101

DB 61 DVRESIRLPGCPGVNPVSVYAVALSQCQALCRRTTDC 100

RESULT 46

US-08-318-388-15

Sequence 15, Application US/08918288

Patent No. 6238590

GENERAL INFORMATION:

APPLICANT: Boime, Irving

TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE

TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET

NUMBER OF SEQUENCES: 83

CORRESPONDENCE ADDRESS:

ADDRESSEE: MORRISON & FOERSTER

STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington

STATE: DC

COUNTRY: USA

ZIP: 20006-1888

COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette

COMPUTER: IBM Compatible

OPERATING SYSTEM: DOS

SOFTWARE: FastSeq for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/918,288

FILING DATE:

CLASSIFICATION:

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 09/282,357

FILING DATE:

APPLICATION NUMBER: 08/853,524

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/199,382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murrashige, Kate H

REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELEPHONE: 202-687-1500
TELEFAX: 202-687-0763
TELEX:
INFORMATION FOR SEQ ID NO: 15:
SEQUENCE CHARACTERISTICS:
LENGTH: 237 amino acids
TYPE: amino acid
STRANDEDNESS: single
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-09-813-288-15

Query Match
Best Local Similarity 82.6%; Pred. No. 2.9e-43;
Matches 100; Conservative 3; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPMTNRVLQGLPALPOVVCNMR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPMTNRVLQGLPALPOVVCNMR 80
QY 62 DVFESIRLPGCPGVNPNVYVALSCCALCRSTTDCGPKDHLPTCDPRFQSSS 121
DB 81 DVFESIRLPGCPGVNPNVYVALSCCALCRSTTDCGPKDHLPTCDPRFQSSS 140
QY 122 S 122
DB 141 S 141

RESULT 47
US-09-813-357-15
SEQUENCE 15, Application US/09282357
PATENT NO. 6242580
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESS: MORRISON & FOERSTER
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE: 18-FEB-1994
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELEPHONE: 202-687-1500
TELEFAX: 202-687-0763

TELEX:
INFORMATION FOR SEQ ID NO: 15:
SEQUENCE CHARACTERISTICS:
LENGTH: 237 amino acids
TYPE: amino acid
STRANDEDNESS: single
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-09-813-357-15

Query Match
Best Local Similarity 82.6%; Pred. No. 2.9e-43;
Matches 100; Conservative 3; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPMTNRVLQGLPALPOVVCNMR 61
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCPMTNRVLQGLPALPOVVCNMR 80
QY 62 DVFESIRLPGCPGVNPNVYVALSCCALCRSTTDCGPKDHLPTCDPRFQSSS 121
DB 81 DVFESIRLPGCPGVNPNVYVALSCCALCRSTTDCGPKDHLPTCDPRFQSSS 140
QY 122 S 122
DB 141 S 141

RESULT 48
US-08-425-673-8
SEQUENCE 8, Application US/08425673
PATENT NO. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESS: Richard R. Muccino
CITY: Princeton
STATE: New Jersey
COUNTRY: USA
ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: Muccino, Richard R.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: UMD 1.0-004
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 114 amino acids
TYPE: amino acid
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO

US-08-425-673-8

Query Match 66.8%; Score 519; DB 1; Length 114;
Best Local Similarity 95.0%; Pred. No. 9.3e-43;
Matches 95; Conservative 1; Mismatches 4; Indels 0; Gaps 0;
QY 2 SKEPLRCRINATLAVRESCPCVITNTTICAGCTPTWRLVGLVLPALPQVVCNTR 61
DB 1 SKEPLRCRINATLAVRESCPCVITNTTICAGCTPTWRLVGLVLPALPQVVCNTR 60
QY 62 DVRFESIRLPQCRGVNVVSYAVALSQCACLRSTTDC 101
DB 61 DVRFESIRLPQCRGVNVVSYAVALSQCACLRSTTDC 100

RESULT 49

US-08-709-924-23
Sequence 23, Application US/08709924
Patent No. 5997871
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
NUMBER OF SEQUENCES: 26
CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/709,924
FILING DATE: 09-SEP-1996
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: Mirock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 69-9090
TELEFAX: (212) 69-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 98 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-924-23

Query Match 65.5%; Score 509; DB 2; Length 98;
Best Local Similarity 98.9%; Pred. No. 7.1e-42;
Matches 92; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
QY 49 VLPALPQVVCNRYDVFESIRLPQCRGVNVVSYAVALSQCACLRSTTDCGPKDHP 108
DB 1 VLPALPQVVCNRYDVFESIRLPQCRGVNVVSYAVALSQCACLRSTTDCGPKDHP 108
QY 109 LTCDDPRFQDSSSKAPPSLPSPRLPGPSDT 141
DB 61 LTCDDPRFQDSSSKAPPSLPSPRLPGPSDT 93

RESULT 50

US-08-709-925-23
Sequence 23, Application US/08709948
Patent No. 6319504
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
NUMBER OF SEQUENCES: 26
CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:
US-08-709-925-23

Sequence 23, Application US/08709925

Patent No. 5997871
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROP
NUMBER OF SEQUENCES: 26
CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/709,925
FILING DATE: 09-SEP-1996
CLASSIFICATION: 512
ATTORNEY/AGENT INFORMATION:
NAME: Mirock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-017
TELEPHONE: (212) 69-9090
TELEFAX: (212) 69-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 98 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-925-23

Query Match 65.5%; Score 509; DB 2; Length 98;
Best Local Similarity 98.9%; Pred. No. 7.1e-42;
Matches 92; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
QY 49 VLPALPQVVCNRYDVFESIRLPQCRGVNVVSYAVALSQCACLRSTTDCGPKDHP 108
DB 1 VLPALPQVVCNRYDVFESIRLPQCRGVNVVSYAVALSQCACLRSTTDCGPKDHP 60
QY 109 LTCDDPRFQDSSSKAPPSLPSPRLPGPSDT 141
DB 61 LTCDDPRFQDSSSKAPPSLPSPRLPGPSDT 93

RESULT 51

US-08-709-948-23
Sequence 23, Application US/08709948
Patent No. 6319504
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
NUMBER OF SEQUENCES: 26
CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:
US-08-709-948-23

```

: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: CURRENT APPLICATION DATA:
:   APPLICATION NUMBER: US/08/709,948
:   FILING DATE: 09-SEP-1996
:   CLASSIFICATION: 424
:   ATTORNEY/AGENT INFORMATION:
:     NAME: Mirock, S. Leslie
:     REGISTRATION NUMBER: 18-872
:     REFERENCE/DOCKET NUMBER: 8769-016
:   TELECOMMUNICATION INFORMATION:
:     TELEPHONE: (212) 790-9090
:     TELEFAX: (212) 869-9741/8864
:   INFORMATION FOR SEQ ID NO: 23:
:     SEQUENCE CHARACTERISTICS:
:       LENGTH: 98 amino acids
:       TYPE: amino acid
:       TOPOLOGY: linear
:     MOLECULE TYPE: peptide
:   US-08-709-948-23

Query Match
Best Local Similarity 65.5%; Score 509; DB 4; Length 98;
Matches 92; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 49 VLPALPOVYCNRYDVFESIRLPGCPGVNPNVSYAVALSQCALCRSTTDCGGPKDHP 108
DB 1 VLPALPOVYCNRYDVFESIRLPGCPGVNPNVSYAVALSQCALCRSTTDCGGPKDHP 60

OY 109 LTCDDPRFQDSSSKAPPPSLPSRLPGPSDT 141
DB 61 LTCDDPRFQDSSSKAPPPSLPSRLPGPSDT 93

RESULT 52
US-08-918-288-70
: Sequence 70, Application US/08918288
: Patent No. 6238590
: GENERAL INFORMATION:
:   APPLICANT: BOIME, Irving
:   TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
:   TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
:   NUMBER OF SEQUENCES: 83
:   CORRESPONDENCE ADDRESS:
:     STREET: 2000 Pennsylvania Avenue, NW, suite 5500
:     CITY: Washington
:     STATE: DC
:     COUNTRY: USA
:     ZIP: 20006-1888
:   COMPUTER READABLE FORM:
:     MEDIUM TYPE: Diskette
:     COMPUTER: IBM Compatible
:     OPERATING SYSTEM: DOS
:     SOFTWARE: FASTSEQ for Windows Version 2.0
:   CURRENT APPLICATION DATA:
:     FILING DATE: 18-FEB-1994
:     FILING DATE: 18-FEB-1994
:     CLASSIFICATION: 536
:     PRIOR APPLICATION DATA:
:       APPLICATION NUMBER: 08/918,288
:       FILING DATE: 25 AUG-1997
:       APPLICATION NUMBER: 08/853,524
:       FILING DATE: 09-MAY-1997
:       APPLICATION NUMBER: 08/199,382
:       FILING DATE: 18-FEB-1994
:     ATTORNEY/AGENT INFORMATION:
:       NAME: Murashige, Kate H
:       REGISTRATION NUMBER: 18-859
:       REFERENCE/DOCKET NUMBER: 29500-20050.25
:     TELECOMMUNICATION INFORMATION:
:       TELEPHONE: 202-887-1500
:       TELEFAX: 202-887-0763
:       TELEX:
:     INFORMATION FOR SEQ ID NO: 70:
:       SEQUENCE CHARACTERISTICS:
:         LENGTH: 93 amino acids
:         TYPE: amino acid
:         STRANDEDNESS: single
:         TOPOLOGY: linear

```

```

: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
:   TELEPHONE: 202-887-1500
:   TELEFAX: 202-887-0763
:   INFORMATION FOR SEQ ID NO: 70:
:     SEQUENCE CHARACTERISTICS:
:       LENGTH: 93 amino acids
:       TYPE: amino acid
:       STRANDEDNESS: single
:       TOPOLOGY: linear
:   US-08-918-288-70

Query Match
Best Local Similarity 100.0%; Pred. No. 18-41;
Matches 93; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGCPCVITVTITICAGTCPTNTRVLOGVLPALPOVYCNRY 61
DB 1 SKEPLRPRCPINATLAVEKGCPCVITVTITICAGTCPTNTRVLOGVLPALPOVYCNRY 60

OY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCALC 94
DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCALC 93

RESULT 53
US-09-282-357-70
: Sequence 70, Application US/09282357
: Patent No. 6242580
: GENERAL INFORMATION:
:   APPLICANT: BOIME, Irving
:   TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
:   TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
:   NUMBER OF SEQUENCES: 83
:   CORRESPONDENCE ADDRESS:
:     STREET: 2000 Pennsylvania Avenue, NW, suite 5500
:     CITY: Washington
:     STATE: DC
:     COUNTRY: USA
:     ZIP: 20006-1888
:   COMPUTER READABLE FORM:
:     MEDIUM TYPE: Diskette
:     COMPUTER: IBM Compatible
:     OPERATING SYSTEM: DOS
:     SOFTWARE: FASTSEQ for Windows Version 2.0
:   CURRENT APPLICATION DATA:
:     FILING DATE: 09/282,357
:     FILING DATE:
:     CLASSIFICATION: 536
:     PRIOR APPLICATION DATA:
:       APPLICATION NUMBER: 08/918,288
:       FILING DATE: 25 AUG-1997
:       APPLICATION NUMBER: 08/853,524
:       FILING DATE: 09-MAY-1997
:       APPLICATION NUMBER: 08/199,382
:       FILING DATE: 18-FEB-1994
:     ATTORNEY/AGENT INFORMATION:
:       NAME: Murashige, Kate H
:       REGISTRATION NUMBER: 18-859
:       REFERENCE/DOCKET NUMBER: 29500-20050.25
:     TELECOMMUNICATION INFORMATION:
:       TELEPHONE: 202-887-1500
:       TELEFAX: 202-887-0763
:       TELEX:
:     INFORMATION FOR SEQ ID NO: 70:
:       SEQUENCE CHARACTERISTICS:
:         LENGTH: 93 amino acids
:         TYPE: amino acid
:         STRANDEDNESS: single
:         TOPOLOGY: linear

```

US-09-282-357-70

Query Match 65.3%; Score 507; DB 4; Length 93;
 Best Local Similarity 100.0%; Pred. No. 1e-41;
 Matches 93; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 60
 QY 62 DVRFESIRLPCPGVNVVSVYAVALSQCQALC 94
 DB 61 DVRFESIRLPCPGVNVVSVYAVALSQCQALC 93

RESULT 54
 US-08-425-673-12
 ; Sequence 12, Application US/08425673
 ; Patent No. 5508261
 ; GENERAL INFORMATION:
 ; APPLICANT: Moyle, William R.
 ; APPLICANT: Campbell, Robert K.
 ; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
 ; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
 ; TITLE OF INVENTION: Methods for Preparing and Using Same
 ; NUMBER OF SEQUENCES: 12
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: Richard R. Muccino
 ; STREET: P.O. Box 1267
 ; CITY: Princeton
 ; STATE: New Jersey
 ; COUNTRY: USA
 ; ZIP: 08551
 ; COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Floppy disk
 ; COMPUTER: IBM PC compatible
 ; OPERATING SYSTEM: DOS/MS-DOS
 ; SOFTWARE: Patent Release #1.0, Version #1.25
 ; CURRENT APPLICATION DATA:
 ; APPLICATION NUMBER: US/08/425,673
 ; FILING DATE:
 ; CLASSIFICATION: 514
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 07/717,151
 ; FILING DATE: 18-JUN-1991
 ; ATTORNEY/AGENT INFORMATION:
 ; NAME: Muccino, Richard R.
 ; REGISTRATION NUMBER: 32,538
 ; TELECOMMUNICATION INFORMATION:
 ; TELEPHONE: (609) 466-3407
 ; TELEFAX: (609) 466-2760
 ; INFORMATION FOR SEQ ID NO: 12:
 ; SEQUENCE CHARACTERISTICS:
 ; LENGTH: 117 amino acids
 ; TYPE: amino acid
 ; TOPOLOGY: linear
 ; MOLECULE TYPE: peptide
 ; HYPOTHETICAL: NO
 ; AMIS-SEARCH: NO
 US-08-425-673-12

Query Match 64.1%; Score 498; DB 1; Length 117;
 Best Local Similarity 91.0%; Pred. No. 9.7e-41;
 Matches 91; Conservative 2; Mismatches 7; Indels 0; Gaps 0;
 QY 2 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61
 DB 1 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 60
 QY 62 DVRFESIRLPCPGVNVVSVYAVALSQCQALCRRTDC 101
 DB 61 DVRFESIRLPCPGVNVVSVYAVALSQCQALCRRTDC 100

RESULT 55
 US-08-327-362-2
 ; Sequence 2, Application US/08327362
 ; Patent No. 5812459
 ; GENERAL INFORMATION:
 ; APPLICANT: William D. Odell, Jeanine T. Griffin, Sanjeev
 ; APPLICANT: Grover, Omar Caticha, Douglas T. Carrell,
 ; APPLICANT: Marion L. Woods
 ; TITLE OF INVENTION: Control of Infectious Microorganisms
 ; TITLE OF INVENTION: by Modulation of Choriionic
 ; TITLE OF INVENTION: Gonadotropin-Related Protein
 ; TITLE OF INVENTION: Activity
 ; NUMBER OF SEQUENCES: 5
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: Thorpe, No. 581249th & Western
 ; CITY: Sandy
 ; STATE: Utah
 ; COUNTRY: USA
 ; ZIP: 84070
 ; COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Diskette, 3.5 inch, 720 Kb storage
 ; COMPUTER: AST Advantage MB-SX20
 ; OPERATING SYSTEM: DOS 6.1
 ; SOFTWARE: Auto Select 5.1
 ; CURRENT APPLICATION DATA:
 ; APPLICATION NUMBER: US/08/327,362
 ; FILING DATE:
 ; CLASSIFICATION: 435
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER:
 ; FILING DATE:
 ; ATTORNEY/AGENT INFORMATION:
 ; NAME: Alan J. Howarth
 ; REGISTRATION NUMBER: 36,553
 ; TELECOMMUNICATION INFORMATION:
 ; TELEPHONE: (801)566-6633
 ; TELEFAX: (801)566-0750
 ; INFORMATION FOR SEQ ID NO: 2:
 ; SEQUENCE CHARACTERISTICS:
 ; LENGTH: 88 amino acids
 ; TYPE: amino acid
 ; TOPOLOGY: linear
 ; MOLECULE TYPE: protein
 ; ORIGINAL SOURCE:
 ; ORGANISM: Homo sapiens
 US-08-327-362-2

Query Match 62.8%; Score 488; DB 2; Length 88;
 Best Local Similarity 100.0%; Pred. No. 6.4e-40;
 Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 53 LPQVVCNVRDVFESIRLPCPGVNVVSVYAVALSQCQALCRRTDCGPRDPLTCD 112
 DB 1 LPQVVCNVRDVFESIRLPCPGVNVVSVYAVALSQCQALCRRTDCGPRDPLTCD 60
 QY 113 DPFQDSSSSKAPPSLPSPRLCPGSD 140
 DB 61 DPFQDSSSSKAPPSLPSPRLCPGSD 88

RESULT 56
 US-09-158-565-2
 ; Sequence 2, Application US/09158565
 ; Patent No. 6139839
 ; GENERAL INFORMATION:
 ; APPLICANT: Odell, William D.
 ; APPLICANT: Griffin, Jeanine T.
 ; APPLICANT: Grover, Sanjeev
 ; APPLICANT: Caticha, Omar

APPLICANT: Carrell, Douglas T.
APPLICANT: Wood, II, M. L.
TITLE OF INVENTION: Control of Infectious Microorganisms by Modulation of
FILE REFERENCE: T1893.DIV
CURRENT APPLICATION NUMBER: US/09/158,565
EARLIER FILING DATE: 1998-09-22
EARLIER APPLICATION NUMBER: US 08/327,362
NUMBER OF SEQ ID NOS: 5
SOFTWARE: WordPerfect 8.0
SEQ ID NO 2
LENGTH: 88
INDELS: 0
MISMATCHES: 0
ORGANISM: Homo sapiens
US-09-158-565-2

Query Match 62.8%; Score 488; DB 4; Length 88;
Best Local Similarity 100.0%; Pred. No. 6.4e-40;
Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 53 LPQVYNYEDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCD 112
DB 1 LPQVYNYEDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCD 60

QY 113 DPFQSSSKAPPSLPSPRLGPSD 140
DB 61 DPFQSSSKAPPSLPSPRLGPSD 88

RESULT 57
US-08-709-924-24
; Sequence 24, Application US/08/09924
; Patent No. 5968513
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
; TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent in Release #1.0, Version #1.30
; APPLICATION NUMBER: US/08/709,924
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 514
; ATTORNEY/AGENT INFORMATION:
; NAME: Misrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-018
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 790-9090
; INFORMATION FOR SEQ ID NO: 24:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 88 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-924-24

Query Match 62.8%; Score 488; DB 4; Length 88;
Best Local Similarity 100.0%; Pred. No. 6.4e-40;
Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 53 LPQVYNYEDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCD 112
DB 1 LPQVYNYEDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCD 60

QY 113 DPFQSSSKAPPSLPSPRLGPSD 140
DB 61 DPFQSSSKAPPSLPSPRLGPSD 88

RESULT 57
US-08-709-924-24
; Sequence 24, Application US/08/09924
; Patent No. 5968513
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
; TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent in Release #1.0, Version #1.30
; APPLICATION NUMBER: US/08/709,924
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 514
; ATTORNEY/AGENT INFORMATION:
; NAME: Misrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-018
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 790-9090
; INFORMATION FOR SEQ ID NO: 24:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 88 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-924-24

Query Match 58.8%; Score 457; DB 2; Length 88;
Best Local Similarity 98.8%; Pred. No. 5.8e-37;
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCDPRQD 118
DB 1 NYDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCDPRQD 60

QY 119 SSSSKAPPSLPSPRLGPSDT 141
DB 61 SSSSKAPPSLPSPRLGPSDT 83

RESULT 58
US-08-709-925-24
; Sequence 24, Application US/08/09925
; Patent No. 5997871
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROP
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent in Release #1.0, Version #1.30
; APPLICATION NUMBER: US/08/709,925
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 512
; ATTORNEY/AGENT INFORMATION:
; NAME: Misrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-017
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 790-9090
; INFORMATION FOR SEQ ID NO: 24:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 88 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-925-24

Query Match 58.8%; Score 457; DB 2; Length 88;
Best Local Similarity 98.8%; Pred. No. 5.8e-37;
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCDPRQD 118
DB 1 NYDVFESIRLPCGPGVNVYVAVALSCQALCRSTTDCGGPKDHPPLTCDPRQD 60

QY 119 SSSSKAPPSLPSPRLGPSDT 141
DB 61 SSSSKAPPSLPSPRLGPSDT 83

RESULT 59
US-08-709-948-24
; Sequence 24, Application US/08/09948
; Patent No. 6319504

```

; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lerner, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPHIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; TELEPHONE: (212) 661-1111
; FAX: (212) 661-1111
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 424
; ATTORNEY/AGENT INFORMATION:
; NAME: Misko, S.
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-016
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 24:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 88 amino acids
; TYPE: amino acids
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-948-24

Query Match 58.8%; Score 457; DB 4; Length 88;
Best Local Similarity 98.8%; Pred. No. 5.8e-37;
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVFESIRLPGCPGVNPNVSVAVALSOCALCRSTTDCGGKDHPLTCDDPRFOD 118
Db 1 NYDVFESIRLPGCPGVNPNVSVAVALSOCALCRSTTDCGGKDHPLTCDDPRFOD 60

QY 119 SSSSKAPPPSLPSRLPGPSDT 141
Db 61 SSSSKAPPPSLPSRLPGPSDT 83

RESULT 60
US-08-425-673-5
; Sequence 5; Application US/08425673
; Patent No. 508261
; GENERAL INFORMATION:
; APPLICANT: Campbell, William R.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; TITLE OF INVENTION: Methods For Preparing and Using Same
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; TELEPHONE: (609) 951-1111
; FAX: (609) 951-1111
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible

```

```

; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/425,673
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 514
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/717,151
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: Muccino, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: OND 1.0-004
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (609) 466-3407
; FAX: (609) 466-3407
; INFORMATION FOR SEQ ID NO: 5:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 149 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; HYPOTHETICAL: NO
; ANTI-SENSE: NO
; US-08-425-673-5

Query Match 57.6%; Score 447.5; DB 1; Length 149;
Best Local Similarity 60.7%; Pred. No. 8.5e-36;
Matches 85; Conservative 15; Mismatches 35; Indels 5; Gaps 2;

QY 2 SKEPLRPRCPINATLAVEKGCVCITVTTCAGTCPTRVLCQVLPALPVVCHYR 61
Db 1 SKEPLRPRCPINATLAVEKGCVCITVTTCAGTCPTRVLCQVLPALPVVCHYR 60

QY 62 DVPESIRLPGCPGVNPNVSVAVALSOCALCRSTTDCGGKDHPLTCDDPRFODSSS 121
Db 61 ELNFAIRLPGCPGVNPNVSVAVALSOCALCRSTTDCGGKDHPLTCDDPRFODSSS 117

QY 122 SKAPP--PSLPSRLPGPS 139
Db 118 SKAPP--PSLPSRLPGPS 137

RESULT 61
US-08-086-915-14
; Sequence 14; Application US/08086915
; Patent No. 4441670N
; GENERAL INFORMATION:
; APPLICANT: Peterson, Kim SI
; TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA
; NUMBER OF SEQUENCES: 17
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Adduci, Mastriani, Schaumburg & Schill
; STREET: 1140 Connecticut Avenue, N.W., Suite 250
; CITY: Washington
; STATE: D.C.
; COUNTRY: U.S.A.
; ZIP: 20036
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/086,915
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Kuboveck, Ronald J.
; REGISTRATION NUMBER: 25,401
; REFERENCE/DOCKET NUMBER: 15873005
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-467-6300

```

TELEFAX: 202-466-2006
INFORMATION FOR SEQ ID NO: 14:
SEQUENCE CHARACTERISTICS:
LENGTH: 46 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
HYPOTHETICAL: NO
ORGANISM: Homo sapiens
FEATURE:
NAME/KEY: Modified-site
LOCATION: 13
OTHER INFORMATION: /note= "The asparagine at position 13 is linked to an oligosaccharide."
FEATURE:
NAME/KEY: Modified-site
LOCATION: 30
OTHER INFORMATION: /note= "The asparagine at position 30 is linked to an oligosaccharide."
US-08-086-915-14

Query Match 29.5%; Score 229; DB 1; Length 46;
Best Local Similarity 100.0%; Pred. No. 1.7e-15;
Matches 41; Conservative 0; Mismatches 0; Indels 0; Caps 0;
Oy 2 STEPLRPRCPINATLAVEKGPVCITVTTTICAGYCPTM 42
Db 6 STEPLRPRCPINATLAVEKGPVCITVTTTICAGYCPTM 46

RESULT 62
US-08-918-288-74
Sequence 74, Application US/08918288
Patent No. 6238890
GENERAL INFORMATION:
APPLICANT: MOYE, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1898
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/918,288
FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 09-AUG-1997
APPLICATION NUMBER: 08/953,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
INFORMATION FOR SEQ ID NO: 74:
SEQUENCE CHARACTERISTICS:
LENGTH: 104 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-09-282-357-74

SEQUENCE CHARACTERISTICS:
LENGTH: 104 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-918-288-74
Query Match 29.3%; Score 228; DB 4; Length 104;
Best Local Similarity 43.6%; Pred. No. 5.2e-15;
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;
Oy 10 CRPNATLAVEKGPVCITVTTTICAGYCPTMTRVLQGVLPALPOV--VCNRYDRVFES 67
Db 3 CELTNTTIAVEKGGCITITTTWCAGCYCTRLVTKD--PARPKIKTCTFKELYVET 60
Oy 68 IRLPGCPGVNPVSYAVALSOCALCRRSTTDC 101
Db 61 VYVPCNHHADSLLTTPVATOCGCGKCDSDTDC 94

RESULT 63
US-09-282-357-74
Sequence 74, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: MOYE, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1898
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 09-AUG-1997
APPLICATION NUMBER: 08/953,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
INFORMATION FOR SEQ ID NO: 74:
SEQUENCE CHARACTERISTICS:
LENGTH: 104 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-09-282-357-74
Query Match 29.3%; Score 228; DB 4; Length 104;
Best Local Similarity 43.6%; Pred. No. 5.2e-15;
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

QY	10	CRFINATLAVEKEGCGVCIVNTTTCAGTCGPTNAGVGLPALPQV--VCNTDVRFRFS	67
DB	3	CELTINITIAVEKEGCGFCITNTTCAGTCGCTTRDLVYKD--PARPKIORTCTFKELVYET	60
QY	68	IRLPGCPRGVNPVIVSTAVALSQCACALGRSTTDC	101
DB	61	VRYPGCAHADSLSYITVPATOCICGCGSDSTDC	94

RESULT 64
US-08-918-388-73
: Sequence 73, Application US/08918288
: Patent No. 6238690
: GENERAL INFORMATION:
: APPLICANT: BOIME, Irving
: APPLICANT: MOYLE, William R.
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 83
: NUMBER OF CDS: 83
: CORRESPONDENCE:
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington
 STATE: DC
 COUNTRY: USA
 ZIP: 20006-1888
 COMPUTER READABLE FORM:
 MEDIUM TYPE: Diskette
 COMPUTER: IBM Compatible
 SOFTWARE: MS-DOS
 SOFTWARE: MS-DOS Windows Version 2.0
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: US/08/918,288
 FILING DATE:
 CLASSIFICATION:
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: 09/282,357
 FILING DATE:
 APPLICATION NUMBER: 08/853,524
 FILING DATE: 09-MAY-1997
 APPLICATION NUMBER: 08/159,382
 FILING DATE: 09-MAY-1997
 ATTORNEY/AGENT INFORMATION:
 NAME: Murchshree, Kate H.
 REGISTRATION NUMBER: 29,959
 REFERENCE/DOCKET NUMBER: 29500-20050.25
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: 202-887-1500
 TELEFAX: 202-887-0763
 TELEX:
 INFORMATION FOR SEQ ID NO: 73:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 108 amino acids
 TYPE: amino acid
 STRAIGHTNESS: single
 TOPOLOGY: linear
 US-08-918-288-73

Query Match 29.3%; Score 228; DB 4; Length 108;
Best Local Similarity 43.6%; Pred. No. 5.4e-15;
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

[illegible]

RESULT 65
US-09-282-357-73

Sequence 73, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: BOEHRINGE
INVENTOR: WILSON, B.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
DR. GREGG E. FORSESTER
CROSSLAND, 2000 NELSON AVE
SUITE 1
CITY: WASHINGTON
STATE: WASHINGTON
ZIP: 98001

```

1 STATE: DC
2
3 COUNTRY: USA
4
5 DATE: 2005-10-08
6
7 COMPUTER TYPE: FORM:
8
9 MEDIUM TYPE: Diskette
10
11 COMPUTER: IBM Compatible
12
13 OPERATING SYSTEM: DOS
14
15 SOFTWARE: FASTFOR Windows Version 2.0
16
17 FILE: C:\WINDOWS\SYSTEM32\FASTFOR.APL
18
19 CUMULATIVE APPLICATION NUMBER: 357
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023
1024
1025

```

FILING DATE:
 PRIOR APPLICATION NUMBER: 536
 APPLICATION NUMBER: 08/918,288
 FILING DATE: 25 AUG-1997
 APPLICATION NUMBER: 08/953,524
 FILING DATE: 09-MAY-1997
 APPLICATION NUMBER: 08/959,382
 FILING DATE: 14 FEB-1994
 ATTORNEY AGENT INFORMATION:
 NAME: Whishring, Kate H.
 REGISTRATION NUMBER: 29,959
 REFERENCE/DOCKET NUMBER: 29500-20050.25

TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 73:
SEQUENCE CHARACTERISTICS:
LENGTH: 108 amino acids
ORIGIN: GenBank
STRANDEDNESS: single
TOPOLOGY: linear
US-09-282-357-73

Query Match	29.3%	Score	228	DB	4	Length	108
Best Local Similarity	43.6%	Pred. No.	5.4e-15				
Matches	41	Conservative	17	Mismatches	32	Indels	4
Gaps	2						

QY 10 CRPINATLAVEKEGCPVCITVNTTICAGYCPTMTRVLGVLPAIPQV--VCNTRDVRFEF 67
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db 3 CELTNNTTIAVEKEGGPCFITNTTWACGYCYTRDLVTKD--PARPKIOKTCTKRELVTET 60

68	IRLPGCPRGVNPVSYAVALSCQCALCRRSTTDC	101
Qy	IRLPGCPRGVNPVSYAVALSCQCALCRRSTTDC	101
Dh	IRLPGCPRGVNPVSYAVALSCQCALCRRSTTDC	101

RESULT 66

US-08-918-288-72
Sequence 72, Application US/08918288
Patent No. 6238890
GENERAL INFORMATION:
APPLICANT: BOIME, William R.
TITLE OF INVENTION: SINGLE-CHAIN
TITLE OF INVENTION: GLYCOPROTEIN
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue

ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
FILING DATE: 09/08/918,288
APPLICATION NUMBER: 09/282,357
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-0763
TELEFAX: 202-887-0763
INFORMATION FOR SEQ ID NO: 72:
SEQUENCE CHARACTERISTICS:
LENGTH: 111 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-918-288-72

Query Match 29.3%; Score 228; DB 4; Length 111;
Best Local Similarity 43.6%; Pred. No. 5.6e-15;
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

QY 10 CRPINALAVEKGGPCVITNTTICAGTCPTMTVLQGVLPALPOV--VCNRYDVFES 67
DB 3 CELTNTIIVKGGCGFCITNTTICAGTCPTMTVLQGVLPALPOV--VCNRYDVFES 67
QY 68 IRLPCCPGVNVVSYAVALSQCCLCRSTTDC 101
DB 61 VVPGCAHADSILYTPVATCGCKGKDSSTDC 94

RESULT 67
US-09-282-357-72
Sequence 72; Application US/09282357
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
FILING DATE: 09/09/282,357

CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
FILING DATE: 09/08/918,288
APPLICATION NUMBER: 09/282,357
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-0763
TELEFAX: 202-887-0763
INFORMATION FOR SEQ ID NO: 72:
SEQUENCE CHARACTERISTICS:
LENGTH: 111 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-09-282-357-72

Query Match 29.3%; Score 228; DB 4; Length 111;
Best Local Similarity 43.6%; Pred. No. 5.6e-15;
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

QY 10 CRPINALAVEKGGPCVITNTTICAGTCPTMTVLQGVLPALPOV--VCNRYDVFES 67
DB 3 CELTNTIIVKGGCGFCITNTTICAGTCPTMTVLQGVLPALPOV--VCNRYDVFES 67
QY 68 IRLPCCPGVNVVSYAVALSQCCLCRSTTDC 101
DB 61 VVPGCAHADSILYTPVATCGCKGKDSSTDC 94

RESULT 68
US-08-425-673-6
Sequence 6; Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
TITLE OF INVENTION: Methods for Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Richard R. Muccino
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA
ZIP: 08551
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC DOS/MS-DOS
SOFTWARE: PATENTID Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,673
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/717,151
FILING DATE: 18-JUN-1991
ATTORNEY/AGENT INFORMATION:
NAME: MUCCINO, Richard R.
REGISTRATION NUMBER: 32,538
REFERENCE/DOCKET NUMBER: UMD 1.0-004
TELECOMMUNICATION INFORMATION:

```
TELEPHONE: (609) 466-3407
TELEFAX: (609) 466-2760
INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 112 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
HYPOTHETICAL: NO
ANTI-SENSE: NO
US-08-425-673-6

Query Match      28.8%; Score 224; DB 1; Length 112;
Best Local Similarity 46.9%; Pred. No. 1.4e-14;
Matches 45; Conservative 11; Mismatches 34; Indels 6; Gaps 3;

QY 10 CRPINATLAVKESGCPVCTVNTTTCAGYCTPTMTVLQGVLPALPOV--VCHYDVRFPS 65
Db 2 CIPTETWTHIERECACLTINTTCAGYCT--MTDINGKLEPKYALSQDVCTYRDFY 59
QY 66 ESRLPGCPRGVNPVYVAVALSQCACLRRTTDC 101
Db 60 RTVEIPQCPHVAIFYSPVYALSKCKGCDYDSDC 95

RESULT 69
US-09-813-288-27
Sequence 27, Application US/08918288
Patent No. 6238890
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ATTORNEY/AGENT INFORMATION:
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/918,288
FILING DATE:
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 223 amino acids
TYPE: amino acid
TOPOLOGY: linear
STRANDEDNESS: single
MOLECULE TYPE: protein
US-09-813-398-3
```

```
FRAGMENT TYPE: Internal
US-08-918-288-27

Query Match      28.6%; Score 222; DB 4; Length 223;
Best Local Similarity 37.3%; Pred. No. 4.6e-14;
Matches 44; Conservative 19; Mismatches 51; Indels 4; Gaps 2;

QY 10 CRPINATLAVKESGCPVCTVNTTTCAGYCTPTMTVLQGVLPALPOV--VCHYDVRFPS 67
Db 21 CELTNITIAIEKEECRCFCSINTTWCAGYCTTDLVYKD--PARPKIQTCTCFELVYET 78
QY 68 IRLPGCPRGVNPVYVAVALSQCACLRRTTDCGGPKDHPKLTCDPFRQSSSKAP 125
Db 79 VRVPGCAHADSLLTYPVATOCCHCKCSDSDTCTVRLGPGSTCYCFQSGSGSGSAP 136

RESULT 70
US-09-282-357-27
Sequence 27, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ATTORNEY/AGENT INFORMATION:
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
COMPUTER: IBM Compatible
OPERATING SYSTEM: WINDOWS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE:
FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 223 amino acids
TYPE: amino acid
TOPOLOGY: linear
STRANDEDNESS: single
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-09-282-357-27

Query Match      28.6%; Score 222; DB 4; Length 223;
Best Local Similarity 37.3%; Pred. No. 4.6e-14;
Matches 44; Conservative 19; Mismatches 51; Indels 4; Gaps 2;

QY 10 CRPINATLAVKESGCPVCTVNTTTCAGYCTPTMTVLQGVLPALPOV--VCHYDVRFPS 67
```

Db 21 CELTNTTIAIEKEECRCISINTTACGYCYTRDLVKD--PARPKIQKCTCFKELVYET 78
QY 68 IRLPGCPGVNVPVSYAVALSQCACLCRSTTDCGGPKDHLPTCDPRFQDSSSSKAP 125
Db 79 VVRVPCAHADSLITVPATQCHCGKCDSDTCTVRLGPGSTCSFGSGSGSGAP 136

RESULT 71

US-08-086-915-12
Sequence 12, Application US/08086915
Patent No. 5441167
GENERAL INFORMATION:
APPLICANT: Pettersson, Kim SI
TITLE OF INVENTION: Variant Lutelinizing Hormone Encoding DNA
NUMBER OF SEQUENCES: 17
CORRESPONDENCE ADDRESS:
ADDRESSEE: Adriaan Matrilani, Schaumburg & Schill
STREET: 1140 Connecticut Avenue, N.W., Suite 250
CITY: Washington
STATE: D.C.
COUNTRY: U.S.A.
ZIP: 20036
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/086,915
FILING DATE: 07-JUL-1993
CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: Kubovcik, Ronald J.
REGISTRATION NUMBER: 25,401
REFERENCE/DOCKET NUMBER: 15873005
TELEPHONE: 1202-467-6300
TELEFAX: 1202-467-6306
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 46 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
ORIGINAL SOURCE:
ORGANISM: Homo sapiens
US-08-086-915-12

Query Match 28.44; Score 221; DB 1; Length 46;
Best Local Similarity 25.14; Pred. No. 9, 8e-15;
Matches 39; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKPLRPRCPINATLAVERGCPVCITVNTTICAGYCPTM 42
Db 6 SREPLRCPHPINATLAVERGCPVCITVNTTICAGYCPTM 46

RESULT 72

US-08-918-288-12
Sequence 12, Application US/08918288
Patent No. 6218890
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA

ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/918,288
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 15-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murshige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 229 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: Internal
US-08-918-288-12

Query Match 28.14; Score 218; DB 4; Length 229;
Best Local Similarity 36.54; Pred. No. 1.1e-13;
Matches 42; Conservative 21; Mismatches 48; Indels 4; Gaps 2;

QY 10 CRPNATLAVERGCPVCITVNTTICAGYCPTMRLVGLQVLPALQV--VCNTRDVPFES 67
Db 21 CELTNTTIAIEKEECRCISINTTACGYCYTRDLVKD--PARPKIQKCTCFKELVYET 78

QY 68 IRLPGCPGVNVPVSYAVALSQCACLCRSTTDCGGPKDHLPTCDPRFQDSSSS 122
Db 79 VVRVPCAHADSLITVPATQCHCGKCDSDTCTVRLGPGSTCSFGSGSGSGS 133

RESULT 73

US-09-282-357-12
Sequence 12, Application US/09282357
Patent No. 6228357
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FASTSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE:

CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX: 202-887-0763

INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 222 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: internal
US-09-282-357-12

Query Match
Best Local Similarity 38.5%, Predicted 1,4e-13,
Matches 42, Conservative 21, Mismatches 48, Indels 4, Gaps 2;

QY 10 CRPINATLAVEKEGCPVCTVTTCAGTCPTMTRVLGVLGVPALPOV--VCNRYDVFES 67
DB 21 CELTNITIAIEKEECRCFISINTWCAGCYTRDLVKD--PARPKIQKTCFELVET 78
QY 68 IRLPCPRGVNPPVSYAVALSQCACLRSTTDCGGPKDHLPTCDPFRDSSSS 122
DB 79 VYVPCAHRAHSLTIPVATQCHCKGKDSSTDTCTVRLGSPSCSGFGEKMGSGS 133

RESULT 74

US-08-918-288-30
Sequence 30, Application us/08918288
Patent No. 6238890
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/282,357
FILING DATE:
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 30:

NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX: 202-887-0763

INFORMATION FOR SEQ ID NO: 30:
SEQUENCE CHARACTERISTICS:
LENGTH: 222 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
FRAGMENT TYPE: internal
US-08-918-288-30

Query Match
Best Local Similarity 37.3%, Predicted 1.4e-13,
Matches 44, Conservative 19, Mismatches 47, Indels 8, Gaps 3;

QY 10 CRPINATLAVEKEGCPVCTVTTCAGTCPTMTRVLGVLGVPALPOV--VCNRYDVFES 67
DB 21 CELTNITIAIEKEECRCFISINTWCAGCYTRDLVKD--PARPKIQKTCFELVET 78
QY 68 IRLPCPRGVNPPVSYAVALSQCACLRSTTDCGGPKDHLPTCDPFRDSSSSCAP 125
DB 79 VYVPCAHRAHSLTIPVATQCHCKGKDSSTDTCTVRLGSPSCSGFGEKMGSGS 132

RESULT 75

US-09-282-357-30
Sequence 30, Application us/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: BOIME, Irving
APPLICANT: MOYLE, William R.
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Avenue, NW, suite 5500
CITY: Washington
STATE: DC
COUNTRY: USA
ZIP: 20006-1888
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/282,357
FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/918,288
FILING DATE: 25 AUG-1997
APPLICATION NUMBER: 08/853,524
FILING DATE: 09-MAY-1997
APPLICATION NUMBER: 08/199,382
FILING DATE: 18-FEB-1994
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20050.25
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-887-1500
TELEFAX: 202-887-0763
TELEX:
INFORMATION FOR SEQ ID NO: 30:
SEQUENCE CHARACTERISTICS:

```

; LENGTH: 222 amino acids
; TYPE: amino acid
; STANDBY: single
; MOLECULE TYPE: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: internal
US-09-282-357-30

Query Match
Best Local Similarity 27.94; Score 217; DB 4; Length 222;
Matches 44; Conservative 19; Mismatches 47; Indels 8; Caps 3;

QY 10 CRPNTAVLEKEGCPVCTVNTTICAGCTPTMTVLOGVLPALPOV--VCNVRDYRES 67
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
DB 21 CELTNITIAIEKEECRCISINTWACGYCTRDLYVKD--PARKIKTKTFFRELIVET 78
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
QY 68 IRLPGCPGVNPNVSYAVALSQCACLRSTTDCGPKDHPGLTCDPRQDSSSKAP 125
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
DB 79 VRVPGCAHADSLSYTPVATOCCHGCKDSDSTDCVRLGSPYCG---SGSGSGSAP 132
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||

RESULT 76
5451527-1
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.; BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 1
; LENGTH: 45

Query Match
Best Local Similarity 27.74; Score 215; DB 6; Length 45;
Matches 38; Conservative 1; Mismatches 1; Indels 0; Caps 0;

QY 102 GPKDHPGLTCDPRQDSSSKAPPSRLPSPDST 141
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
DB 1 GPKDHPGLTCDPRQDSSSKAPPSRLPSPDST 40
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||

RESULT 77
US-08-425-673-3
; Sequence 3; Application US/08425673
; Patent No. 5508261
; GENERAL INFORMATION:
; APPLICANT: Moyle, William R.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; ZIP: 08551
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION NUMBER: US/08/425,673
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760
```

```

; APPLICATION NUMBER: US/08/425,673
; FILING DATE:
; CLASSIFICATION: 514
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/717,151
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760
; SEQUENCE CHARACTERISTICS:
; LENGTH: 111 amino acids
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; HYPOTHEICAL: NO
; ANTI-SENSE: NO
US-08-425-673-3

Query Match
Best Local Similarity 27.54; Score 214; DB 1; Length 111;
Matches 38; Conservative 19; Mismatches 33; Indels 4; Caps 2;

QY 10 CRPNTAVLEKEGCPVCTVNTTICAGCTPTMTVLOGVLPALPOV--VCNVRDYRES 67
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
DB 3 CELTNITIAIEKEECRCISINTWACGYCTRDLYVKD--PARKIKTKTFFRELIVET 60
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
QY 68 IRLPGCPGVNPNVSYAVALSQCACLRSTTDC 101
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||
DB 61 VRVPGCAHADSLSYTPVALQCHGCKDSDSTDC 94
      |||:||||| |||:||||| |||:||||| |||:||||| |||:||||| |||:|||||

RESULT 78
US-08-425-673-4
; Sequence 4; Application US/08425673
; Patent No. 5508261
; GENERAL INFORMATION:
; APPLICANT: Moyle, William R.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; ZIP: 08551
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION NUMBER: US/08/425,673
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760
```

INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 111 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
HYDROPHILIC: NO
ANTISENSE: NO
US-08-425-673-4

Query Match 27.5%; Score 214; DB 1; Length 111;
Best Local Similarity 40.4%; Pred. No. 1.2e-13;
Matches 38; Conservative 19; Mismatches 33; Indels 4; Gaps 2;

OY 10 CRPNATLAVEKGGPCVITVNTTICAGYCPMTNVLQVLPALPOV--VNYRDVRFES 67
DB 3 CELTNIINIEKRCISININWAGCTCTRDLYTKO--PAPRIKTKCTFRELVIET 60
OY 68 IRLGCPGPNVSVYVAVALSCCALCRSTDC 101
DB 61 VRVPGCAHADSLYTPVALQCHGKCDSDSTDC 94

RESULT 79
US-08-086-915-11
Sequence 11; Application US/08086915
Patent No. 5441167
GENERAL INFORMATION:
APPLICANT: Petterson, Kim SI
TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA

NUMBER OF SEQUENCES: 17
CORRESPONDENCE ADDRESS:
ADDRESSEE: Adduci, Mastriani, Schaumberg & Schill
STREET: 1140 Connecticut Avenue, N.W., Suite 250
CITY: Washington
STATE: D.C.
COUNTRY: U.S.A.
ZIP: 20036

COMPUTER READABLE FORM:
MEDIUM TYPE: floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/086.915
FILING DATE: 07-JUL-1993

CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: Kubovcik, Ronald J.
REGISTRATION NUMBER: 25,401
REFERENCE/DOCKET NUMBER: 15873005
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-467-6300

TELEFAX: 202-466-2006
INFORMATION FOR SEQ ID NO: 11:
SEQUENCE CHARACTERISTICS:
LENGTH: 46 amino acids
TYPE: amino acid

TOPOLOGY: linear
MOLECULE TYPE: protein
HYDROPHILIC: NO
ORIGINAL SOURCE:
ORGANISM: Homo sapiens
FEATURE:
NAME/KEY: Modified-site

LOCATION: 30
OTHER INFORMATION: /note- "The asparagine at position
OTHER INFORMATION: 30 is linked to an oligosaccharide."
US-08-086-915-11

Query Match 26.6%; Score 207; DB 1; Length 46;
Best Local Similarity 90.2%; Pred. No. 2.1e-13;
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMT 42
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPMT 46
RESULT 80
US-08-086-915-13
Sequence 13; Application US/08086915
Patent No. 5441167
GENERAL INFORMATION:
APPLICANT: Petterson, Kim SI
TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA
NUMBER OF SEQUENCES: 17
CORRESPONDENCE ADDRESS:
ADDRESSEE: Adduci, Mastriani, Schaumberg & Schill
STREET: 1140 Connecticut Avenue, N.W., Suite 250
CITY: Washington
STATE: D.C.
COUNTRY: U.S.A.
ZIP: 20036

COMPUTER READABLE FORM:
MEDIUM TYPE: floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/086.915
FILING DATE: 07-JUL-1993

CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: Kubovcik, Ronald J.
REGISTRATION NUMBER: 25,401
REFERENCE/DOCKET NUMBER: 15873005
TELECOMMUNICATION INFORMATION:
TELEPHONE: 202-467-6300

TELEFAX: 202-466-2006
INFORMATION FOR SEQ ID NO: 13:

SEQUENCE CHARACTERISTICS:
LENGTH: 46 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
HYDROPHILIC: NO
ORIGINAL SOURCE:
ORGANISM: Homo sapiens
US-08-086-915-13

Query Match 26.6%; Score 207; DB 1; Length 46;
Best Local Similarity 90.2%; Pred. No. 2.1e-13;
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMT 42
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPMT 46

RESULT 81
5177193-3

Patent No. 5177193
APPLICANT: BOWME, IRVING; MATZUK, MARTIN M.
TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES
NUMBER OF SEQUENCES: 20
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/532.254
FILING DATE: 01-JUN-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 313,646
FILING DATE: 21-FEB-1989
SEQ ID NO: 3:
LENGTH: 131
5177193-3

Query Match 24.8%; Score 193; DB 6; Length 131;
Best Local Similarity 39.6%; Pred. No. 1.5e-11;
Matches 38; Conservative 18; Mismatches 34; Indels 6; Gaps 4;
QY 10 GRINATLAVEKEGCPVITVNTTI-CAGYCPNTRVLOGVLPALPOV--VCNVRDVRFE 66
DB 21 CELTNITIALKEKRCFCISINTNCZICZCYTRDYKED--PARPKIONTCIFRELUYE 78
QY 67 SIRLPGCPGVNPVWSYVALSCQALC--RSTTDC 101
DB 79 TVRVGCAHADSLLTYPVATOCGKCDSDSTDC 114

RESULT 82
US-08-086-915-17 Application US/08086915
; Sequence 17; Score 154; Pred. No. 1.5e-11;
; Best Local Similarity 39.6%;
; GENERAL INFORMATION:
; APPLICANT: Petterson, Kim SI
; TITLE OF INVENTION: Variant Lutelinizing Hormone Encoding DNA
; NUMBER OF SEQUENCES: 17
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Adduci, Mastriani, Schaumburg & Schill
; STREET: 1140 Connecticut Avenue, N.W., Suite 250
; CITY: Washington
; STATE: D.C.
; COUNTRY: U.S.A.
; ZIP: 20036
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/086,915
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 516
; ATTORNEY/AGENT INFORMATION:
; NAME: Kubovcik, Ronald J.
; REGISTRATION NUMBER: 25,401
; REFERENCE/DOCKET NUMBER: 15873005
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-467-6300
; TELEFAX: 202-466-2006
; INFORMATION FOR SEQ ID NO: 17:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 41 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; HYPOTHETICAL: NO
; FEATURE:
; NAME/KEY: Modified-site
; LOCATION: 13
; OTHER INFORMATION: /note- "The asparagine at position 13 is linked to an oligosaccharide."
US-08-086-915-17

Query Match 24.6%; Score 191; DB 1; Length 41;
Best Local Similarity 82.9%; Pred. No. 6.2e-12;
Matches 34; Conservative 2; Mismatches 5; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPM 42
DB 1 SRGLRPLRCPINATLAVEKEACPVCTFTTICAGYCPM 41

RESULT 83
US-08-086-915-15
; Sequence 15; Application US/08086915
; Patent No. 5965513
; GENERAL INFORMATION:
; APPLICANT: Petterson, Kim SI

; TITLE OF INVENTION: Variant Lutelinizing Hormone Encoding DNA
; NUMBER OF SEQUENCES: 17
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Adduci, Mastriani, Schaumburg & Schill
; STREET: 1140 Connecticut Avenue, N.W., Suite 250
; CITY: Washington
; STATE: D.C.
; COUNTRY: U.S.A.
; ZIP: 20036
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/086,915
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 516
; ATTORNEY/AGENT INFORMATION:
; NAME: Kubovcik, Ronald J.
; REGISTRATION NUMBER: 25,401
; REFERENCE/DOCKET NUMBER: 15873005
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-467-6300
; TELEFAX: 202-466-2006
; INFORMATION FOR SEQ ID NO: 15:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 41 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; HYPOTHETICAL: NO
; FEATURE:
; NAME/KEY: Modified-site
; LOCATION: 13
; OTHER INFORMATION: /note- "The asparagine at position 13 is linked to an oligosaccharide."
US-08-086-915-15

Query Match 23.0%; Score 179; DB 1; Length 41;
Best Local Similarity 75.6%; Pred. No. 8.7e-11;
Matches 31; Conservative 4; Mismatches 6; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPM 42
DB 1 SRGLRPLRCPINATLAVEKEACPVCTFTTICAGYCPM 41

RESULT 84
US-08-709-924-25
; Sequence 25; Application US/08709924
; Patent No. 5965513
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/709,924

FILING DATE: 09 SEP-1996
 CLASSIFICATION: 514
 ATTORNEY/AGENT INFORMATION:
 NAME: MISTOCK, S. Leslie
 REGISTRATION NUMBER: 19,672
 REFERENCE/DOCKET NUMBER: 8769-018
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: (212) 790-9090
 TELEFAX: (212) 869-9741/8864
 TELEX: 66141 PENNIE
 INFORMATION FOR SEQ ID NO: 25:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 37 amino acids
 TOPOLOGY: linear
 MOLECULE TYPE: peptide
 US-08-709-924-25

Query Match 22.5%; Score 175; DB 2; Length 37;
Best Local Similarity 100.0%; Pred. No. 1.9e-10;
Matches 32; Conservative 0; Mismatches 0; Indels

```
QY      110 TCDDPRFQDSSSKAPPSLPSPRLPGPST 141  
        | | | | | | | | | | | | | | | |  
Db      1 TCDDPRFQDSSSKAPPSLPSPRLPGPST 32
```

RESULT 85
US-08-709-925-25
: Sequence 25. Application US/08709925

;	PATENT NO.	5997871
;	GENERAL INFORMATION:	
;	APPLICANT:	Gallo, Robert C.
;	APPLICANT:	Bryan, Joseph
;	APPLICANT:	Lunardi - Iskandar
;	TITLE OF INVENTION:	TREATMENT
;	TITLE OF INVENTION:	ADMINIS
;	NUMBER OF SEQUENCES:	26

```

CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2711
COMPUTER READABLE FORM:

```

```

; HAZARD STATE: floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/709,925

```

CLASSIFICATION: 512
ATTORNEY/AGENT INFORMATION:
NAME: Misrock, S. Leslie

```

1 REFERENCE/JACKET NUMBER: 8769-017
2
3 TELECOMMUNICATION INFORMATION:
4
5 TELEPHONE: (212) 790-5090
6
7 TELEFAX: (212) 869-3741/8864
8
9 TELEX: 66141 PENNIE
10
11 INFORMATION FOR SEQ ID NO: 25:
12
13 SEQUENCE CHARACTERISTICS:
14
15 LENGTH: 37 amino acids
16
17 TYPE: amino acid
18
19 TOPOLOGY: linear
20
21 MOLECULE TYPE: peptide

```

Query Match	22.5%	Score 175;	DB 2;	Length 37;
Best Local Similarity	100.0%	Pred. No. 1.9e-10;		
Matches 32: Conservative	0;	Mismatches	0;	Indels

QY	110	TCDDPRFQDSSSKAPPSLPSPRLPGSDT	141
Db	1	TCDDPRFQDSSSKAPPSLPSPRLPGSDT	32

RESULT 86
US-08-709-948-25
; Sequence 25, Application US/08709948

Patent NO. 6119304
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: TREATMENT AND
TITLE OF INVENTION: BY ADMINISTRATOR
NUMBER OF SEQUENCES: 26

ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-3711

```

:
: COMPUTER READABLE FORM:
:
: MEDIUM TYPE: Floppy disk
:
: COMPUTER: IBM PC compatible
:
: OPERATING SYSTEM: PC-DOS/VMS-DOS
:
: SOFTWARE: Patent-In Release #1.0, Version #1.30
:
: CURRENT APPLICATION DATA:
:
: APPLICATION NUMBER: IIS/OA/709, 948
:
:

```

FILING DATE: 09-SEP-1996
 CLASSIFICATION: 424
 ATTORNEY/AGENT INFORMATION:
 NAME: Mirock, S. Leslie

REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-016
TELECOMMUNICATION INFORMATION:
TELEPHONE: (313) 790-9090

TELEFAX: (212) 869-9741/886644
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 25:
SEQUENCE CHARACTERISTICS:

```

; LENGTH: 37 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOVES: 4 TYPE: 1

```

US-08-709-948-25

	Matches	32: Conservative	0: Mismatch
Qy	110	TCDDPRFQDSSSKAPPSLPSRLPGSDT	141

RESULT 87

US-08-086-915-16
; Sequence 16, Application US/08086915
; Patent No. 5444167
; GENERAL INFORMATION.

1 APPLICANT: Petterson, Kim S.
2 NUMBER OF REQUESTS: 1
3 NUMBER OF REQUESTS: 1
4 VARIANTS OF REQUESTS: 1
5 CORRESPONDENCE ADDRESS:
6 ADDRESSEE: Adduci, Mastrani, Schaumburg & Schill
7 STREET: 1140 Connecticut Avenue, N.W., Suite 250
8 CITY: Washington
9 STATE: D.C.
10 COUNTRY: U.S.A.
11 ZIP: 20036


```
; STATE: Illinois
; COUNTRY: USA
; ZIP: 60064-3500
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: SYLION DATA
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: PCT/US94/02539
; FILING DATE:
; CLASSIFICATION:
; ATTORNEY/AGENT INFORMATION:
; NAME: Wong, Wean King
; REGISTRATION NUMBER: 33,561
; REFERENCE/DOCKET NUMBER: 5324.PC.01
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (708) 938-3317
; TELEFAX: (708) 938-2623
; TELEX:
; INFORMATION FOR SEQ ID NO: 29:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 39 amino acid residues
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: unknown
; MOLECULE TYPE: peptide
; ORIGINAL SOURCE:
; ORGANISM:
; PCT-US94-02539-29

Query Match 19.9%; Score 155; DB 5; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSPSLPSPRLGPSDT 141
Db 1 DPFQDSSSKAPPSPSLPSPRLGPSDT 29

RESULT 91
5451527-8
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 8:
; LENGTH: 39
5451527-8

Query Match 19.9%; Score 155; DB 6; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSPSLPSPRLGPSDT 141
Db 1 DPFQDSSSKAPPSPSLPSPRLGPSDT 29

RESULT 92
5451527-12
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
```

```
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 12:
; LENGTH: 39
5451527-12

Query Match 19.9%; Score 155; DB 6; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSPSLPSPRLGPSDT 141
Db 6 DPFQDSSSKAPPSPSLPSPRLGPSDT 34

RESULT 93
5451527-6
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 6:
; LENGTH: 36
5451527-6

Query Match 17.4%; Score 135.5; DB 6; Length 36;
Best Local Similarity 93.1%; Pred. No. 1.1e-06;
Matches 27; Conservative 0; Mismatches 1; Indels 1; Gaps 1;

QY 113 DPFQDSSSKAPPSPSLPSPRLGPSDT 141
Db 1 DPFQDSSSKAPPSPSLPSPRLGPSDT 28

RESULT 94
5451527-9
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 9:
; LENGTH: 41
5451527-9

Query Match 17.4%; Score 135.5; DB 6; Length 41;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1; Indels 1; Gaps 1;
```

```

Qy 113 DPREQSSSSKAPPSPSPSRPLPGPSPOT 141
Db 1 DPREQD-SSSKAPPSPSPSRPLPGPSPOT 28

RESULT 95
: Patent No. 5451527
: APPLICANT: SARIN, VIRENDER K.; BOONER, JOHN B.
: TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
: PURIFICATION PROCEDURES
: NUMBER OF SEQUENCES: 14
: CURRENT APPLICATION NUMBER: US/07/647,893
: FILING DATE: 30-JAN-1991
: PRIORITY APPLICATION DATA:
: APPLICATION NUMBER: 375,731
: FILING DATE: 10-JUL-1989
: APPLICATION NUMBER: 221,687
: FILING DATE: 20-JUL-1988
: SEQ ID NO.10:
: LENGTH: 41
5451527-10

Query Match 17.4% Score 135.5; DB 6;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1;

Qy 113 DPREQSSSSKAPPSPSPSRPLPGPSPOT 141
Db 6 DPREQD-SSSKAPPSPSPSRPLPGPSPOT 33

RESULT 96
: Patent No. 5451527
: APPLICANT: SARIN, VIRENDER K.; BOONER, JOHN B.
: TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
: PURIFICATION PROCEDURES
: NUMBER OF SEQUENCES: 14
: CURRENT APPLICATION NUMBER: US/07/647,893
: FILING DATE: 30-JAN-1991
: PRIORITY APPLICATION DATA:
: APPLICATION NUMBER: 375,731
: FILING DATE: 10-JUL-1989
: APPLICATION NUMBER: 221,687
: FILING DATE: 20-JUL-1988
: SEQ ID NO.10:
: LENGTH: 41
5451527-11

Query Match 17.4% Score 135.5; DB 6;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1;

Qy 113 DPREQSSSSKAPPSPSPSRPLPGPSPOT 141
Db 1 DPREQD-SSSKAPPSPSPSRPLPGPSPOT 28

RESULT 97
: Patent No. 5451527
: APPLICANT: SARIN, VIRENDER K.; BOONER, JOHN B.
: TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
: PURIFICATION PROCEDURES
: NUMBER OF SEQUENCES: 14
: CURRENT APPLICATION NUMBER: US/07/647,893
: FILING DATE: 30-JAN-1991
: PRIORITY APPLICATION DATA:

```

```
RESULT 100
US-08-485-692-13
: Sequence 13, Application US/08485692
: Patent No. 5759818
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: MODIFIED PROTEIN AND PEPTIDE
: TITLE OF INVENTION: PHARMACEUTICALS
: NUMBER OF SEQUENCES: 23
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Ave. N.W.
: CITY: Washington, D.C.
: COUNTRY: USA
: ZIP: 20006-1812
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patentin Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/485,692
: FILING DATE:
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 08/049,869
: FILING DATE: 20-APR-1993
: ATTORNEY/AGENT INFORMATION:
: NAME: MORASHIGE, KATE H.
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20030.21
: TELEPHONE: (202) 887-1500
: TELEFAX: (202) 887-0763
: INFORMATION FOR SEQ ID NO: 13:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 28 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
US-08-485-692-13
Query Match 15.4%; Score 120; DB 1; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 119 SSSSKAPPPSLPSPRLPGPSDT 141
Db 1 SSSSKAPPPSLPSPRLPGPSDT 23

RESULT 101
US-08-419-519-13
: Sequence 13, Application US/08419519
: Patent No. 5792460
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: MODIFIED PROTEIN AND PEPTIDE
: TITLE OF INVENTION: PHARMACEUTICALS
: NUMBER OF SEQUENCES: 23
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Ave. N.W.
: CITY: Washington, D.C.
: COUNTRY: USA
: ZIP: 20006-1812
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patentin Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
```

```
APPLICATION NUMBER: US/08/419,519
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/049,869
FILING DATE: 20-APR-1993
ATTORNEY/AGENT INFORMATION:
NAME: MORASHIGE, KATE H.
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20030.21
TELEPHONE: (202) 887-1500
TELEFAX: (202) 887-0763
INFORMATION FOR SEQ ID NO: 13:
SEQUENCE CHARACTERISTICS:
LENGTH: 28 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-419-519-13
Query Match 15.4%; Score 120; DB 1; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 119 SSSSKAPPPSLPSPRLPGPSDT 141
Db 1 SSSSKAPPPSLPSPRLPGPSDT 23

RESULT 102
US-08-918-288-1
: Sequence 1, Application US/08918288
: Patent No. 6238890
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 63
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: COMPUTER: IBM Compatible
: OPERATING SYSTEM: DOS
: SOFTWARE: FASTSO for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/918,288
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 09/282,357
: FILING DATE:
: APPLICATION NUMBER: 08/853,524
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-FEB-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: MORASHIGE, KATE H.
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: INFORMATION FOR SEQ ID NO: 1:
```

```

; SEQUENCE CHARACTERISTICS:
; LENGTH: 28 amino acids
; TYPE: amino acids
; STRANDEDNESS: single
; TOPOLOGY: linear
US-08-918-288-1

Query Match 15.4%; Score 120; DB 4; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 119 SSSSKAPPSLPSPRLGPSDT 141
DB 1 SSSSKAPPSLPSPRLGPSDT 23

RESULT 103
US-09-282-357-1
; Sequence 1, Application US/09282357
; Patent No. 6242580
; GENERAL INFORMATION:
; APPLICANT: BOIME, Irving
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
; NUMBER OF SEQUENCES: 83
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-1888
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; COMPUTER: IBM Compatible
; OPERATING SYSTEM: DOS Windows Version 2.0
; SOFTWARE: MS-DOS
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/282,357
; FILING DATE:
; CLASSIFICATION: 536
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/918,288
; FILING DATE: 25 AUG-1997
; APPLICATION NUMBER: 08/853,524
; FILING DATE: 09-MAY-1997
; APPLICATION NUMBER: 08/853,524
; FILING DATE: 18-FEB-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H.
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20050.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-887-1500
; TELEFAX: 202-887-0763
; TELEX:
; INFORMATION FOR SEQ ID NO: 1:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 28 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
US-09-282-357-1

Query Match 15.4%; Score 120; DB 4; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 119 SSSSKAPPSLPSPRLGPSDT 141
DB 1 SSSSKAPPSLPSPRLGPSDT 23
```

```

RESULT 104
US-09-604-871-3
; Sequence 3, Application US/09604871
; Patent No. 634074
; GENERAL INFORMATION:
; APPLICANT: Burg, Josef
; APPLICANT: Hilger, Bernd
; APPLICANT: Josel, Hans-Peter
; TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES
; FILE REFERENCE: 1098 nonprovisional
; CURRENT APPLICATION NUMBER: US/09/604,871
; CURRENT FILING DATE: 2000-06-28
; PRIOR APPLICATION NUMBER: 60/151,454
; PRIOR FILING DATE: 1999-08-30
; PRIOR APPLICATION NUMBER: 60/147,452
; PRIOR FILING DATE: 1999-08-30
; PRIOR APPLICATION NUMBER: 60/142,243
; PRIOR FILING DATE: 1999-07-02
; NUMBER OF SEQ ID NOS: 3
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 28
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-604-871-3

Query Match 15.4%; Score 120; DB 4; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 119 SSSSKAPPSLPSPRLGPSDT 141
DB 1 SSSSKAPPSLPSPRLGPSDT 23

RESULT 105
US-09-239-256-3
; Sequence 3, Application US/08239256
; Patent No. 5585345
; GENERAL INFORMATION:
; APPLICANT: BOIME, IRVING
; APPLICANT: MATZUK, MARTIN M.
; APPLICANT: KEENE, JEFFREY L.
; TITLE OF INVENTION: CTP EXTENDED FORM OF LH
; NUMBER OF SEQUENCES: 24
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Ave. N.W.
; CITY: Washington, D.C.
; COUNTRY: USA
; ZIP: 20006-1812
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/239,256
; FILING DATE: 05-MAY-1994
; PRIOR APPLICATION:
; ATTORNEY/AGENT INFORMATION:
; NAME: MURASHIGE, KATE H.
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20030.12
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (202) 887-1500
; TELEFAX: (202) 887-0763
; TELEX: 90-4030
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 75 amino acids
; TYPE: amino acid
```

Gaps 0;

RESULT 110
US-08-036-555B-20
; Sequence 20, Application US/08036555B
; Patent No. 5716930
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;
; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Felfe & Lynch
; STREET: 805 Third Avenue
; CITY: New York City
; STATE: New York
; COUNTRY: USA
; ZIP: 10022
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
; COMPUTER: IBM
; OPERATING SYSTEM: PC-DOS
; SOFTWARE: Wordperfect
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/036,555B
; FILING DATE: 24-MAR-1993
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/965,173
; FILING DATE: 23-OCT-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/940,389
; FILING DATE: 03-SEP-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: U.K. 91 07566.3
; FILING DATE: 10-APRIL-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: Tsai, Christine H.
; REGISTRATION NUMBER: 34,266
; REFERENCE/DOCKET NUMBER: LUD 5250.4
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 838-3884
; TELEFAX: (212) 838-3884
; INFORMATION FOR SEQ ID NO: 20:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 26
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
US-08-036-555B-20

Query Match 11.7%; Score 91; DB 1; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;
QY 62 DVRFESIRLPCGPGVNPVVSVAL 87
DB 1 ELFSASVRLPCGPGVNPVVSVAL 26

RESULT 111
US-08-469-569-20
; Sequence 20, Application US/08469569
; Patent No. 5716930
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;

; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Felfe & Lynch
; STREET: 805 Third Avenue
; CITY: New York City
; STATE: New York
; COUNTRY: USA
; ZIP: 10022
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
; COMPUTER: IBM
; OPERATING SYSTEM: PC-DOS
; SOFTWARE: Wordperfect
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/469,569
; FILING DATE: 05-JUN-1995
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/036,555
; FILING DATE: 24-MAR-1993
; APPLICATION NUMBER: 07/965,173
; FILING DATE: 23-OCT-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/940,389
; FILING DATE: 03-SEP-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/907,138
; FILING DATE: 30-JUN-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/863,703
; FILING DATE: 03-APRIL-1992
; APPLICATION NUMBER: U.K. 91 07566.3
; FILING DATE: 10-APRIL-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: Tsai, Christine H.
; REGISTRATION NUMBER: 34,266
; REFERENCE/DOCKET NUMBER: LUD 5250.4
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 838-3884
; TELEFAX: (212) 838-3884
; INFORMATION FOR SEQ ID NO: 20:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 26
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
US-08-469-569-20

Query Match 11.7%; Score 91; DB 1; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;
QY 62 DVRFESIRLPCGPGVNPVVSVAL 87
DB 1 ELFSASVRLPCGPGVNPVVSVAL 26

RESULT 112
US-08-249-322A-20
; Sequence 20, Application US/08249322A
; Patent No. 5716930
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;
; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

CORRESPONDENCE ADDRESS:
ADDRESSEE: Felfe & Lynch
STREET: 805 Third Avenue
CITY: New York City
STATE: New York
COUNTRY: USA
ZIP: 10022

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
COMPUTER: IBM
OPERATING SYSTEM: PC-DOS
SOFTWARE: Wordperfect
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/249,322A
FILING DATE: 26-MAY-1994
CLASSIFICATION: 25
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/036,555
FILING DATE: 24-MAR-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/965,173
FILING DATE: 23-OCT-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/940,389
FILING DATE: 03-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/907,138
FILING DATE: 10-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/863,703
FILING DATE: 03-APRIL-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: U.K. 91 07566.3
FILING DATE: 10-APRIL-1991
ATTORNEY/AGENT INFORMATION:
NAME: Tsai, Christine H.
REGISTRATION NUMBER: 34,266
REFERENCE/DOCKET NUMBER: LUD 250.4
TELEPHONE: (212) 688-9200
TELEFAX: (212) 838-3884
INFORMATION FOR SEQ ID NO: 20:
LENGTH: 26
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear

US-08-249-322A-20

Query Match 11.74; Score 91; DB 1; Length 26;
Best Local Similarity 61.54; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB 1 ELSFASVRLPGCPGVNPNVSYAVAL 26

RESULT 113
US-08-469-526A-20
US-08-734-591A-20
Sequence 20, Application US/08469526A
Patent No. 5792849
GENERAL INFORMATION:
APPLICANT: Goodearl, Andrew
APPLICANT: Stroobant, Paul
APPLICANT: Minghetti, Luisa
APPLICANT: Waterfield, Michael
APPLICANT: Marchionni, Mark
APPLICANT: Hiles, Ian
TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
PREPARATION AND USE
NUMBER OF SEQUENCES: 187

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

CORRESPONDENCE ADDRESS:
ADDRESSEE: Clark & Elbing LLP
STREET: 176 Federal Street
CITY: Boston
STATE: MA
COUNTRY: USA
ZIP: 02110

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFTWARE: FastSeq for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/469,526A
FILING DATE: 06 June 1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/036,555
FILING DATE: 24-MAR-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/965,173
FILING DATE: 23-OCT-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/940,389
FILING DATE: 03-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/907,138
FILING DATE: 03-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/863,703
FILING DATE: 03-APRIL-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: U.K. 91 07566.3
FILING DATE: 10-APR-1991
ATTORNEY/AGENT INFORMATION:
NAME: Bleker-Brady, Kristina
REGISTRATION NUMBER: 39,109
REFERENCE/DOCKET NUMBER: 04585/00200A
TELEPHONE: 617-428-0200
TELEFAX: 617-428-7045
INFORMATION FOR SEQ ID NO: 20:
LENGTH: 26
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear

US-08-469-526A-20

Query Match 11.74; Score 91; DB 1; Length 26;
Best Local Similarity 61.54; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB 1 ELSFASVRLPGCPGVNPNVSYAVAL 26

RESULT 114
US-08-734-591A-20
US-08-734-591A-20
Sequence 20, Application US/08734591A
Patent No. 5854220
GENERAL INFORMATION:
APPLICANT: Goodearl, Andrew
APPLICANT: Stroobant, Paul
APPLICANT: Minghetti, Luisa
APPLICANT: Waterfield, Michael
APPLICANT: Hiles, Ian
APPLICANT: Marchionni, Mark
APPLICANT: Chen, Mario
TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
PREPARATION AND USE
NUMBER OF SEQUENCES: 187
CORRESPONDENCE ADDRESS:
ADDRESSEE: Clark & Elbing LLP
CITY: Boston
STATE: Massachusetts

COUNTRY: U.S.A.
ZIP: 02110
COMPUTER READABLE FORM:
MEDIUM TYPE: 3 1/2 Diskette, 1.44 Mb
OPERATING SYSTEM: IBM Compatible Pentium
SOFTWARE: WordPerfect (Version 7.0)
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/734,591A
FILING DATE: 22-OCT-1996
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/470,335
FILING DATE: 06-JUN-1995
PROSECUTION DATA:
APPLICATION NUMBER: 08/036,555
FILING DATE: 03-MAR-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/965,173
FILING DATE: 23-OCT-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/940,389
FILING DATE: 03-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/907,138
FILING DATE: 30-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/853,703
FILING DATE: 03-APR-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: UK 91 07566.3
FILING DATE: 10-APR-1991
ATTORNEY/AGENT INFORMATION:
NAME: Bieker-Brady, Kristina
REFERENCE/DOCKET NUMBER: 04585/00200P
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 428-0200
TELEFAX: (617) 428-7045
TELEX:
INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
LENGTH: 26
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
US-08-734,591A-20

Query Match 11.7%; Score 91; DB 2; Length 26;
Best Local Similarity 61.5%; Pred No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGVNPVSYAVAL 87
DB 1 ELSFASVRLPGCGVDPVMSFPVAL 26

RESULT 115
US-08-469-660-20
Sequence 20: Application US/08469660
Patent No. 5876971
GENERAL INFORMATION:
APPLICANT: Gwynne, David I.; Marchionni, Mark;
APPLICANT: McBurney, Robert N.
TITLE OF INVENTION: INHIBITORS OF CELL PROLIFERATION,
THEIR PREPARATION AND USE
NUMBER OF SEQUENCES: 184
CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson
STREET: 225 Franklin Street
CITY: Boston
STATE: Massachusetts
ZIP: 02112804

COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
COMPUTER: IBM
OPERATING SYSTEM: PC-DOS
SOFTWARE: WordPerfect
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/469,660
FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/011,396
FILING DATE: 29-JAN-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/984,085
FILING DATE: 01-DEC-1992
PROSECUTION DATA:
APPLICATION NUMBER: 07/951,747
FILING DATE: 25-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/927,337
FILING DATE: 10-AUG-1992
ATTORNEY/AGENT INFORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 04585/017004
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 542-5070
TELEFAX: 200154
INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
LENGTH: 26
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
US-08-469-660-20

Query Match 11.7%; Score 91; DB 2; Length 26;
Best Local Similarity 61.5%; Pred No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGVNPVSYAVAL 87
DB 1 ELSFASVRLPGCGVDPVMSFPVAL 26

RESULT 116
US-08-470-335-20
Sequence 20: Application US/08470335F
Patent No. 6147190
GENERAL INFORMATION:
APPLICANT: GOODEARL, ANDREW
APPLICANT: STROOBANT, PAUL
APPLICANT: MINGHETTI, LUISA
APPLICANT: WATERFIELD, MICHAEL
APPLICANT: MARCHIONNI, MARK
APPLICANT: CHEN, MARIO S.
TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
PREPARATION AND USE
REFERENCE/DOCKET NUMBER: 0469660
CURRENT APPLICATION NUMBER: US/08/470,335F
FILING DATE: 1995-06-06
EARLIER APPLICATION NUMBER: 08/036,555
NUMBER OF SEQ ID NOS: 252
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 20
LENGTH: 26
TYPE: PRT
ORGANISM: Bos taurus
US-08-470-335-20

Query Match 11.7%; Score 91; DB 4; Length 26;

Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB 1 ELSFASVRLPGCPGVNPNVSYAVAL 26

RESULT 117

US-08-735-021-20
; Sequence 20, Application US/08735021B
; Patent No. 6194377
; GENERAL INFORMATION:
; APPLICANT: GOODEARL, ANDREW
; APPLICANT: STROOBANT, PAUL
; APPLICANT: MINGHETTI, LOUISA
; APPLICANT: WATERFIELD, MICHAEL
; APPLICANT: MARCHIONNI, MARK
; APPLICANT: CHEN, MARIO S.
; APPLICANT: HILES, IAN
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
; FILE REFERENCE: 04585/00200L
; CURRENT APPLICATION NUMBER: US/08/735, 021B
; EARLIER FILING DATE: 1996-10-22
; EARLIER APPLICATION NUMBER: 08/472,065
; EARLIER FILING DATE: 1993-03-24
; EARLIER APPLICATION NUMBER: 08/036,555
; EARLIER FILING DATE: 1993-03-24
; EARLIER APPLICATION NUMBER: 07/965,173
; EARLIER FILING DATE: 1992-10-23
; EARLIER APPLICATION NUMBER: 07/940,389
; EARLIER FILING DATE: 1992-09-03
; EARLIER APPLICATION NUMBER: 07/907,138
; EARLIER FILING DATE: 1992-06-30
; EARLIER APPLICATION NUMBER: 07/863,703
; NUMBER OF SEQUENCES: 187
; SOFTWARE: FASTSEQ for Windows Version 3.0
; SEQ ID NO 20
; LENGTH: 26
; TYPE: PRT
; ORGANISM: Bos taurus
US-08-735-021-20

Query Match 11.7%; Score 91; DB 4; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB 1 ELSFASVRLPGCPGVNPNVSYAVAL 26

RESULT 118

US-08-734-664A-20
; Sequence 20, Application US/08734664A
; Patent No. 6204241
; GENERAL INFORMATION:
; APPLICANT: GOODEARL, ANDREW
; APPLICANT: STROOBANT, PAUL
; APPLICANT: MINGHETTI, LOUISA
; APPLICANT: WATERFIELD, MICHAEL
; APPLICANT: MARCHIONNI, MARK
; APPLICANT: CHEN, MARIO
; APPLICANT: HILES, IAN
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
; FILE REFERENCE: 04585/00200L
; NUMBER OF SEQUENCES: 187
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Clark & Elbing LLP
; STREET: 176 Federal Street
; CITY: Boston

STATE: Massachusetts
COUNTRY: U.S.A.
ZIP: 02110
COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5" Diskette, 1.44 MB
COMPUTER: IBM Compatible Pentium
OPERATING SYSTEM: Windows95
SOFTWARE: FASTSEQ Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/734, 664A
FILING DATE: 22-OCT-1996
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
PRIOR APPLICATION NUMBER: 08/249,322
FILING DATE: 26-MAY-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/036,555
FILING DATE: 21-MAR-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/965,173
FILING DATE: 23-OCT-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/940,389
FILING DATE: 03-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/907,138
FILING DATE: 30-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/863,703
FILING DATE: 03-APR-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: UK 91 07566.3
FILING DATE: 10-APR-1991
ATTORNEY/AGENT INFORMATION:
NAME: Bleker-Brady, Kristina
REGISTRATION NUMBER: 39,109
REFERENCE/DOCKET NUMBER: 04585/00200J
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 428-0200
TELEFAX: (617) 428-7043
TELEX:
INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
LENGTH: 26
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
US-08-734-664A-20

Query Match 11.7%; Score 91; DB 4; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB 1 ELSFASVRLPGCPGVNPNVSYAVAL 26

RESULT 119

US-08-470-339-20
; Sequence 20, Application US/08470339C
; Patent No. 6204241
; GENERAL INFORMATION:
; APPLICANT: GOODEARL, ANDREW
; APPLICANT: STROOBANT, PAUL
; APPLICANT: MINGHETTI, LOUISA
; APPLICANT: WATERFIELD, MICHAEL
; APPLICANT: MARCHIONNI, MARK
; APPLICANT: CHEN, MARIO S.
; APPLICANT: HILES, IAN
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
; FILE REFERENCE: 04585/00200L

```

: CURRENT APPLICATION NUMBER: US/08/470.339C
: EARLIER FILING DATE: 1995-06-06
: EARLIER APPLICATION NUMBER: 08/036,555
: EARLIER FILING DATE: 1993-03-24
: EARLIER FILING DATE: 1993-09-03
: EARLIER FILING DATE: 1993-09-03
: EARLIER FILING DATE: 1992-06-30
: EARLIER FILING DATE: 1992-06-30
: EARLIER FILING DATE: 1992-04-03
: EARLIER FILING DATE: 1992-04-03
: EARLIER FILING DATE: 1999-04-10
: NUMBER OF SEQ ID NOS: 226
: SOFTWARE: FASTSEQ for Windows Version 4.0
: SEQ ID NO: 20
: NAME: PRT
: TYPE: PRT
: ORGANISM: Bos taurus
: US-08-470-339-20

Query Match      11.7%  Score 91; DB 4; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY  62 DVRFESIRLPGCPGVNPVSVYVAL 87
DB   1 ELFSASVRLPGCPGVNPVSVYVAL 26

RESULT 120
PCT-US94-05083C-20
: Sequence 20, Application PC/TUS9405083C
: GENERAL INFORMATION:
: APPLICANT: Robert Sklar, Mark Marchionni,
: APPLICANT: David I. Gwynne
: TITLE OF INVENTION: METHODS FOR ALTERING
: TITLE OF INVENTION: MUSCLE CONDITION
: NUMBER OF SEQUENCES: 195
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Fish & Richardson
: STREET: 225 Franklin Street
: CITY: Boston
: STATE: Massachusetts
: ZIP: 02110-2804
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette, 5.25 inch, 360
: MEDIUM TYPE: kb storage
: COMPUTER: IBM
: OPERATING SYSTEM: PC-DOS
: SOFTWARE: Wordperfect
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: PCT/US94/05083C
: FILING DATE: 06-MAY-94
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: PRIOR APPLICATION NUMBER: 08/209,204
: FILING DATE: 08-MAR-94
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/059,022
: FILING DATE: 06-MAY-93
: NAME/AGENT INFORMATION:
: ATTORNEY/AGENT INFORMATION:
: REGISTRATION NUMBER: 30,162
: REFERENCE/DOCKET NUMBER: 04585/028W01
: TELEPHONE: (617) 542-5070
: TELEX: (617) 542-8906
: INFORMATION FOR SEQ ID NO: 20:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 26
: TYPE: amino acid
: STRANDEDNESS:

```

```

: TOPOLOGY: linear
: PCT-US94-05083C-20

Query Match      11.7%  Score 91; DB 5; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 10; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY  62 DVRFESIRLPGCPGVNPVSVYVAL 87
DB   1 ELFSASVRLPGCPGVNPVSVYVAL 26

RESULT 121
PCT-US95-06846A-20
: Sequence 20, Application PC/TUS9506846A
: GENERAL INFORMATION:
: APPLICANT: Stroobant, Paul;
: APPLICANT: Marchionni, Michael;
: APPLICANT: Marchionni, Mark;
: APPLICANT: Marchionni, Michael;
: APPLICANT: Marchionni, Michael;
: APPLICANT: Marchionni, Michael;
: TITLE OF INVENTION: Preparation and Use
: TITLE OF INVENTION: Preparation and Use
: NUMBER OF SEQUENCES: 178
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Felfe & Lynch
: STREET: 805 Third Avenue
: CITY: New York City
: STATE: New York
: COUNTRY: USA
: ZIP: 10022
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
: COMPUTER: IBM
: OPERATING SYSTEM: PC-DOS
: SOFTWARE: Wordperfect
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: PCT/US95/06846A
: FILING DATE: 25-MAY-1995
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/249,322
: FILING DATE: 26-MAY-1994
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/036,555
: FILING DATE: 24-MAR-1993
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/965,173
: FILING DATE: 23-OCT-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/940,389
: FILING DATE: 03-SEP-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/907,138
: FILING DATE: 30-JUN-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/863,703
: FILING DATE: 03-APRIL-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: U.K. 91 07566.3
: FILING DATE: 10-APRIL-1991
: ATTORNEY/AGENT INFORMATION:
: NAME/AGENT INFORMATION:
: REGISTRATION NUMBER: 0,946
: REFERENCE/DOCKET NUMBER: 0,946
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (212) 688-9200
: TELEFAX: (212) 838-3884
: INFORMATION FOR SEQ ID NO: 20:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 26
: TYPE: amino acid
: STRANDEDNESS:
: TOPOLOGY: linear
: PCT-US95-06846A-20

```

Query Match 11.7% Score 91; DB 5; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRESIRLPCPGVNVVSYVAL 87
DB 1 ELSPASVRLPCPGVNVVSYVAL 26

RESULT 122

US-09-146-283-4

: Sequence 4, Application US/09146283

: Patent No. 5976546

: GENERAL INFORMATION:

: APPLICANT: Laus, Reiner

: APPLICANT: Ruegg, Curtis L.

: TITLE OF INVENTION: Immunostimulatory Compositions

: NUMBER OF SEQUENCES: 10

: CORRESPONDENCE ADDRESS:

: ADDRESSEE: Dehlinger & Associates

: STREET: 350 Cambridge Ave. Suite 250

: CITY: Palo Alto

: STATE: CA

: COUNTRY: USA

: ZIP: 94306

: COMPUTER READABLE FORM:

: MEDIUM TYPE: Floppy disk

: COMPUTER: IBM PC compatible

: OPERATING SYSTEM: PC-DOS/MS-DOS

: SOFTWARE: Patent In Release #1.0, Version #1.25

: CURRENT APPLICATION DATA:

: APPLICATION NUMBER: US/09/146,283

: FILING DATE: 03-SEPT-1998

: CLASSIFICATION: 536

: ATTORNEY/AGENT INFORMATION:

: NAME: Judge, Linda R.

: REGISTRATION NUMBER: 42,702

: REFERENCE/DOCKET INFORMATION:

: TELECOMMUNICATION INFORMATION:

: TELEPHONE: 650-324-0880

: TELEFAX: 650-324-0960

: INFORMATION FOR SEQ ID NO: 4:

: SEQUENCE CHARACTERISTICS:

: LENGTH: 782 amino acids

: TYPE: amino acid

: TOPOLOGY: linear

: MOLECULAR WEIGHT: protein

: HYDROTHERMAL: NO

: ORIGINAL SOURCE:

: ORGANISM: homo sapiens

: INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8

US-09-146-283-4

Query Match 11.3% Score 88; DB 2; Length 782;
Best Local Similarity 23.1%; Pred. No. 1.2;
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;

QY 5 PLAPRCPINATLAV---EKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPQVVCNVR 61
DB 562 PCHEQCPQNSVTCGPEADQCAC-----ANX 591

QY 62 DVRESIRLPCPGVNVVSYVAL-----SCQ-CAL-CRSTTDCGPKDHLPTCD 112
DB 592 DPPEFCVAR---CPGKVKPDLSTYMPINKFPEDEGACQPCPINCTHSCVDL----- 637

QY 113 DPFQSSSSKAPPLSPSLRPGPS 139
DB 638 DKGCPAQBPASPLTSLEAPSPSPS 664

RESULT 123

US-09-146-283-4

: Sequence 4, Application US/09146283

: Patent No. 5976546

: GENERAL INFORMATION:

: APPLICANT: Laus, Reiner

: APPLICANT: Ruegg, Curtis L.

: TITLE OF INVENTION: Immunostimulatory Compositions

: NUMBER OF SEQUENCES: 10

: CORRESPONDENCE ADDRESS:

: ADDRESSEE: Dehlinger & Associates

US-08-579-823A-4

: Sequence 4, Application US/08579823A

: Patent No. 6080409

: GENERAL INFORMATION:

: APPLICANT: Laus, Reiner

: APPLICANT: Ruegg, Curtis L.

: TITLE OF INVENTION: Immunostimulatory Composition and Method

: NUMBER OF SEQUENCES: 10

: CORRESPONDENCE ADDRESS:

: ADDRESSEE: Dehlinger & Associates

: STREET: 350 Cambridge Ave. Suite 250

: CITY: Palo Alto

: STATE: CA

: COUNTRY: USA

: ZIP: 94306

: COMPUTER READABLE FORM:

: MEDIUM TYPE: Floppy disk

: COMPUTER: IBM PC compatible

: OPERATING SYSTEM: PC-DOS/MS-DOS

: SOFTWARE: Patent In Release #1.0, Version #1.25

: CURRENT APPLICATION DATA:

: APPLICATION NUMBER: US/08/579,823A

: FILING DATE: 03-DEC-1998

: CLASSIFICATION: 536

: ATTORNEY/AGENT INFORMATION:

: NAME: Judge, Linda R.

: REGISTRATION NUMBER: 42,702

: REFERENCE/DOCKET INFORMATION:

: TELECOMMUNICATION INFORMATION:

: TELEPHONE: 650-324-0880

: TELEFAX: 650-324-0960

: INFORMATION FOR SEQ ID NO: 4:

: SEQUENCE CHARACTERISTICS:

: LENGTH: 782 amino acids

: TYPE: amino acid

: TOPOLOGY: linear

: MOLECULAR WEIGHT: protein

: HYDROTHERMAL: NO

: ORIGINAL SOURCE:

: ORGANISM: homo sapiens

: INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8

US-08-579-823A-4

Query Match 11.3% Score 88; DB 3; Length 782;
Best Local Similarity 23.1%; Pred. No. 1.2;
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;

QY 5 PLAPRCPINATLAV---EKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPQVVCNVR 61
DB 562 PCHEQCPQNSVTCGPEADQCAC-----ANX 591

QY 62 DVRESIRLPCPGVNVVSYVAL-----SCQ-CAL-CRSTTDCGPKDHLPTCD 112
DB 592 DPPEFCVAR---CPGKVKPDLSTYMPINKFPEDEGACQPCPINCTHSCVDL----- 637

QY 113 DPFQSSSSKAPPLSPSLRPGPS 139
DB 638 DKGCPAQBPASPLTSLEAPSPSPS 664

RESULT 124

US-09-344-195-4

: Sequence 4, Application US/09344195

: Patent No. 6216662

: GENERAL INFORMATION:

: APPLICANT: Laus, Reiner

: APPLICANT: Ruegg, Curtis L.

: TITLE OF INVENTION: Immunostimulatory Compositions

: NUMBER OF SEQUENCES: 10

: CORRESPONDENCE ADDRESS:

: ADDRESSEE: Dehlinger & Associates

STREET: 350 Cambridge Ave. Suite 250
CITY: Palo Alto
STATE: CA
COUNTRY: USA
ZIP: 94306
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/344,195
FILING DATE: 24-Jun-1999
CLASSIFICATION: <unknown>
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/09/146,283
FILING DATE: 23-SEP-1998
ATTORNEY/AGENT INFORMATION:
NAME: Judge, Linda R.
REGISTRATION NUMBER: 42,702
REFERENCE/DOCKET NUMBER: 7636-0010.21
TELECOMMUNICATION INFORMATION:
TELEPHONE: 650-324-0980
TELEFAX: 650-324-0960
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 162 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
HYPOTHETICAL: NO
ORIGINAL SOURCE:
ORGANISM: homo sapiens
INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8
SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-09-344-195-4
Query Match 11.13; Score 88; DB 4; Length 762;
Best Local Similarity 21.13; Pred. No. 1.2;
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;
QY 5 PLRPRCPINATLAV---EKGGPCVITVTTICAGYCPMTTRVLOGVLPALPQVGVNVR 61
DB 562 PCHPECPQNGSVTCGPEADQVAC-----ARHK 591
QY 62 DVFESIRLPCPGVNVVSYAVL-----SCQ-CAL-CRRSTTDCGPKDHPITCD 112
DB 592 DPFCVAV---CFSGVKEDLSTAPINKFPEDEGACQPCINCHSVOL----- 637
QY 113 DPFQSSSKAPPSLPSPSLRCP 139
DB 638 DKGCPAZORASPLTSLAPSPSPS 664
RESULT 125
US-08-239-256-17
Sequence 17, Application US/08239256
Patent No. 558345
GENERAL INFORMATION:
APPLICANT: IRVING
ATTORNEY/AGENT INFORMATION:
NAME: KEENE, JEFFREY L.
REGISTRATION NUMBER: 34,202
REFERENCE/DOCKET NUMBER: 20296-20035.00
TELECOMMUNICATION INFORMATION:
ADDRESS: MORRISON & FOERSTER
STREET: 2000 Pennsylvania Ave. N.W.
CITY: Washington, D.C.
COUNTRY: USA
ZIP: 20006-1812
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/239,256
FILING DATE: 06-MAY-1994
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: MURASHIGE, KATE H.
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20030.12
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 887-1500
TELEFAX: (202) 887-0763
TELEX: 90-4030
INFORMATION FOR SEQ ID NO: 17:
SEQUENCE CHARACTERISTICS:
LENGTH: 176 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-239-256-17
Query Match 10.94; Score 85; DB 1; Length 42;
Best Local Similarity 27.34; Pred. No. 0.084;
Matches 27; Conservative 1; Mismatches 11; Indels 60; Gaps 4;
QY 27 CIVVTTICAGYCPMTTRVLOGVLPALPQVGVNVRVFEISIRLPCPGVNVVSYAVA 86
DB 3 CRNTCCNCTGACN-----CNT----- 19
QY 87 LSCQCALCRSTTDCGPKDHPITCDPFDSSSSKAP 125
DB 20 -ACQCALC-----TCCD-REFDSSSSKAP 41
RESULT 126
US-08-485-449-5
Sequence 5, Application US/08485449
Patent No. 5824789
GENERAL INFORMATION:
APPLICANT: VANDENBERG, DAVID
TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE
TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS AND METHODS OF USE
TITLE OF INVENTION: THERBOF
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 755 Page Mill Road
CITY: Palo Alto
STATE: California
COUNTRY: USA
ZIP: 94304-1018
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/485,449
CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: KOSKI, ANTOINETTE F.
REGISTRATION NUMBER: 34,202
REFERENCE/DOCKET NUMBER: 20296-20035.00
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 813-5600
TELEFAX: (415) 494-0792
TELEX: 706141
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
LENGTH: 176 amino acids
TYPE: amino acid

STRANDEDNESS: single
TOPOLOGY: linear
US-08-485-449-5

Query Match 10.9%; Score 84.5; DB 2; Length 376;
Best Local Similarity 28.3%; Pred. No. 1.1;
Matches 52; Conservative 18; Mismatches 55; Gaps 12;

QY 8 PRCP-----INATLAVEKECP-----VCITVN--TTICAGYC--PTMT 43
DB 5 PRCPGLAGLLFLALSALSNEILGLKPGEPPLNTVCLTSLGSLKRLGLCLRPDVT 64
QY 44 -RVLGVLPAPOVYCNTRDVFESIRLP-----CPRGVNPV-----VS 82
DB 65 ASALQGLHIAVHCQHQQRQRMNCSALEGGRLPHISAILKRGFSAFSMLAAGYM 124
QY 83 YAVALSOCALCRSTTDCGK---GPKDHLTCDDPRFODSSSKAPPSLP--SPSLRPG 137
DB 125 HAVATA--CSLGLVSCGCGMGSGQDR-LRAKLQLQALSRLKPKPSPPGSPS--PG 179
QY 138 PSDT 141
DB 180 PQDT 183

RESULT 127
US-08-761-277A-45
; Sequence 45; Application US/08761277A
; Patent No. 5972334

GENERAL INFORMATION:
APPLICANT: Denney Jr., Dan W.
TITLE OF INVENTION: Vaccines For Treatment Of Lymphoma And
TITLE OF INVENTION: Leukemia
NUMBER OF SEQUENCES: 80
CORRESPONDENCE ADDRESS:
ADDRESSEE: Medien & Carroll, LLP
STREET: 220 Montgomery Street, Suite 2200
CITY: San Francisco
STATE: California
COUNTRY: United States of America
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/761.277A
FILING DATE: 06-DEC-1996
CLASSIFICATION: 44
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/644,664
FILING DATE: 01-MAY-1996

ATTORNEY/AGENT INFORMATION:
NAME: MacKnight, Kamrin T.
REGISTRATION NUMBER: 38,230
REFERENCE/DOCKET NUMBER: GENITOPB-02406
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 45:
SEQUENCE CHARACTERISTICS:
LENGTH: 377
TYPE: amino acids
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-761-277A-45

Query Match 10.9%; Score 84.5; DB 2; Length 377;
Best Local Similarity 28.9%; Pred. No. 1.1;
Matches 52; Conservative 9; Mismatches 62; Indels 57; Gaps 13;

QY 1 PSKEPLRPRCPINATLAVEKEC-----PVCITVNTTICAGYCTMTRVLGVL-LP 51

DB 6 PSVFPLAPCSRSTSGGTAA--LGLVKDYFPEPTVVMNSGALTSQVHTFFAVLQSSGLY 63
QY 52 ALPOW-----CNYR-----DVFESIRLP-----CPRGVNPVVSIA 84
DB 64 SLSSVVVPSSSLGTOTTCNVHAKSPKTKYDKRVE-LKTPADTTHTCRCPPEP----- 117
QY 85 VALSIOC-ALCHBSTTDCGPK--DHLTCDDPRFODSSSKAPP--PSLSRSLPGPS 139
DB 118 --KSCDTTPPCPR-----CPREKSCDTPPC--PRCPKSCDTPPCPCPAPPELLGGS 169

RESULT 128

US-08-485-449-2
; Sequence 2; Application US/08485449
; Patent No. 5824789

GENERAL INFORMATION:
APPLICANT: BERG, DAVID
TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE
TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS AND METHODS OF USE
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER
STREET: 755 Page Mill Road
CITY: Palo Alto
STATE: California
COUNTRY: USA
ZIP: 94304-1018

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/485,449
FILING DATE:
CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: MORRISON & FOERSTER
REGISTRATION NUMBER: 34,202
REFERENCE/DOCKET NUMBER: 20296-20035.00
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 813-5600
TELEFAX: (415) 494-0792
TELEX: 706141
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 389 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-485-449-2

Query Match 10.7%; Score 83.5; DB 2; Length 389;
Best Local Similarity 28.6%; Pred. No. 1.4;
Matches 48; Conservative 19; Mismatches 58; Indels 43; Gaps 10;

QY 14 NATLAVEKECP-----VCITVN--TTICAGYC--PTMT-RVLQGLVLPALPOVYCHYR 61
DB 29 NEULGLKPGEPPLTNTVCLTSLGSLKRLGLCLRPDVTASALQGLHIAVHCQHLR 88
QY 62 DVFESIRLP-----CPRGVNPV-----VSVALSCOCALCRSTTDC 101
DB 89 DQWNCNLSGGLRPHISAILKRGFSAFSMLAAGYAVATA--CSLGLVSCG 146
QY 102 G----GPKDHLTCDDPRFODSSSKAPPSLP-----SRLPGSDT 141
DB 147 GKGSGQDR-LRAKLQLQALSRLKPKPSPPGPGPDT 193

RESULT 129

US-08-485-449-7

```
; Sequence 7, Application US/08485449
; Patent No. 5824789-9
; APPLICANT: VANDERBERG, DAVID
; TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS AND METHODS OF USE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 755 Page Mill Road
; CITY: Palo Alto
; STATE: California
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/485,449
; FILING DATE: 01-MAR-1996
; CLASSIFICATION: 536
; PRIORITY INFORMATION:
; NAME: KOSKI, ANTOINETTE F.
; REGISTRATION NUMBER: 34,202
; REFERENCE/DOCKET NUMBER: 20296-20035.00
; TELEPHONE: (415) 813-5600
; TELEFAX: (415) 494-0792
; TELETYPE: 706141
; INFORMATION FOR SEQ ID NO: 7:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 389
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; US-08-485-449-7

Query Match 10.74; Score 83.5; DB 2; Length 389;
Best Local Similarity 28.64; Pred. No. 1.4;
Matches 48; Conservative 19; Mismatches 58; Indels 43; Gaps 10;

QY 14 NATLAVEKSP-----VCTVW--TTICAGYC---PTMT-RVQGVLPALPQVWYR 61
DB 29 NEILGLKPEPLTQNTVYCLHSLGSKRQLGLCLNPDVYASALQGLHIVHCOHQR 88
QY 62 DVRFESIRLPG-----CPRGVNPV-----VYVAVALSCCALCRSTTDC 101
DB 89 DQHNCSALEGGGLPHHSAILARGFESAFSMLAAGVHVAATA--CSLGLVSCGC 146
QY 102 G---GPKDHPITCDOPFOSSSKAPPPLSP-----SRLPGPSDT 141
DB 147 GWGSGQDR-LRAKLQLOALSRSKSPHLPSPGCGSPSPGQPT 193

RESULT 130
US-08-609-443B-15
; Sequence 15, Application US/08609443B
; Patent No. 5840693
; GENERAL INFORMATION:
; APPLICANT: ERIKSSON, Ulf
; APPLICANT: OLOFSSON, Birgitta
; APPLICANT: ALITALO, Kari
; APPLICANT: PAJUSOLA, Katri
; TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND
; NUMBER OF SEQUENCES: 57
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Evenson, McKeown, Edwards & Lenahan, P.L.L.C.
; STREET: 1200 G Street, N.W., Suite 700
; CITY: Washington
; STATE: DC
```

```
; STATE: DC
; COUNTRY: USA
; ZIP: 20005
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/609,443B
; FILING DATE: 01-MAR-1996
; CLASSIFICATION: 435
; PRIORITY INFORMATION:
; APPLICATION NUMBER: US 08/397,651
; REGISTRATION NUMBER: 36,269
; REFERENCE/DOCKET NUMBER: 1064/41979CF4
; TELEPHONE: (202) 628-8800
; TELEFAX: (202) 628-8844
; INFORMATION FOR SEQ ID NO: 15:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 207 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; ORGANISM SOURCE: human
; TISSUE TYPE:
; US-08-609-443B-15

Query Match 10.54; Score 81.5; DB 2; Length 207;
Best Local Similarity 26.84; Pred. No. 1.1;
Matches 40; Conservative 11; Mismatches 65; Indels 33; Gaps 9;

QY 7 RPRCRP--INATLAVE-----KEGCPVCITVTITICAGYCPMTNRVLQGVLPALPQVC 58
DB 44 RATCPREVVVPLVYELMTAKVLVPSCTVQR--CGGCCPD-----DGLCEVPT 92
QY 59 NYRQVPEP--STRLPQCPGVNPVSVYVALSCCALCRSTTDCGGKDEHPT---CDD 113
DB 93 GQHOVFMOLLKIRTPSSOLGEMLESHS-----QCE-CREKKKDSAVPORAATPHRPO 146
QY 114 PRF---QOSSSKAPPPLSPSRLPGPS 139
DB 147 PRSVPGWDSAPGAPSPADITHPTPARGPS 175

RESULT 131
US-08-569-063C-15
; Sequence 15, Application US/08569063C
; Patent No. 5928939
; GENERAL INFORMATION:
; APPLICANT: ERIKSSON, Ulf
; APPLICANT: OLOFSSON, Birgitta
; APPLICANT: ALITALO, Kari
; APPLICANT: PAJUSOLA, Katri
; TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND
; NUMBER OF SEQUENCES: 23
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Evenson, McKeown, Edwards & Lenahan, P.L.L.C.
; STREET: 1200 G Street, N.W., Suite 700
; CITY: Washington
; STATE: DC
```

COUNTRY: USA
ZIP: 20005
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/569,063C
FILING DATE: 06-DEC-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/469,427
FILING DATE: 06-JUN-1995
APPLICATION DATA:
APPLICATION NUMBER: US 08/397,651
FILING DATE: 01-MAR-1995
ATTORNEY/AGENT INFORMATION:
NAME: EVANS, Joseph D.
REGISTRATION NUMBER: 26,269
TELECOMMUNICATION INFORMATION:
REFERENCE/DOCKET NUMBER: 1064/41979Cp3
TELEPHONE: (202) 628-8800
TELEFAX: (202) 628-8844
INFORMATION FOR SEQ ID NO: 15:
SEQUENCE CHARACTERISTICS:
LENGTH: 207 amino acids
TYPE: amino acid
STANDARDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: Protein
ORIGINAL SOURCE: human
TISSUE TYPE: human
US-08-569-063C-15

Query Match 10.5%; Score 81.5; DB 2; Length 207;
Best Local Similarity 26.8%; Pred. No. 1.1;
Matches 40; Conservative 11; Mismatches 65; Indels 33; Gaps 9;
QY 7 RRCRPP--INATLAVE-----KRCPCVCTVNTTICAGYCPMTFRVLQVLPALPOVVC 58
DB 44 RATCPREVVPVLTVELMCTVAKOLVPSCLTVQR--CGCCCPD-----DGLCEVPT 92
QY 59 NYRDVFE--SIRLPGCPGVNPVYSVAVALSCQALCRSTTDGCGPKDHLPT---CDD 113
DB 93 GQHVVRMQLIMIRYPSQLGEMSLERS-----QCE-CRPKKKDSAVRPAATPHRPO 146
QY 114 PRF---QSSSSKAPPSLPSPSLRGP 139
DB 147 PRSVPCWDSAPGAPSPADITHPTPAGPS 175

RESULT 132
US-08-753-247-6
Sequence 6, Application US/08/53247
Patent No. 6210929
GENERAL INFORMATION:
APPLICANT: SCHLOKAT, Uwe
APPLICANT: FISCHER, Bernhard
APPLICANT: FALKNER, Falko-Guenther
APPLICANT: DORNER, Friedrich
APPLICANT: EIBL, Johann
TITLE OF INVENTION: A FUSION PROTEIN COMPRISING A FURIN
DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A
HETEROLOGOUS SEQUENCE
NUMBER OF SEQUENCES: 29
CORRESPONDENCE ADDRESS:
ADDRESSEE: Foley & Lardner
STREET: 3000 K Street, N.W., Suite 500
CITY: Washington
STATE: D.C.
COUNTRY: USA
ZIP: 20007-5109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/569,063C
FILING DATE: 22-NOV-1995

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/753,247
FILING DATE: 22-NOV-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: AT 1928/95
FILING DATE: 24-NOV-1995
ATTORNEY/AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29,768
REFERENCE/DOCKET NUMBER: 40433/149
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202)672-5300
TELEFAX: (202)672-5399
INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 709 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-753-247-6

Query Match 10.1%; Score 78.5; DB 4; Length 709;
Best Local Similarity 25.3%; Pred. No. 8.5; Indels 51; Gaps 13;
Matches 39; Conservative 18; Mismatches 18
QY 1 PSKEPLRP--CRPINATLAVEKRCPCVC---ITVNTTICAGYCPMTFRVLQVLPAL- 53
DB 575 PEGLEVPSSCKTTLTSS-----QACVCEGEGFSLHOKSCVORCP-----PGFA 619
QY 54 PQVCNT---RDVRESIRLPGCPGVNPVYSVAVALSCQALCR-RSTTDGCGPKD- 107
DB 620 PQVLDTHYSTENV--ETIRASVC-----APCHASCATCGPALTDLCLSCPSHA 666
QY 108 ---PL--TCDDPREDDSSSKAPPSLPSPSLP 136
DB 667 SLDPVEQTCSS---ROSQSSRESPPQ-QQPPRLP 695

RESULT 133
US-08-753-247-9
Sequence 9, Application US/08/53247
Patent No. 6210929
GENERAL INFORMATION:
APPLICANT: SCHLOKAT, Uwe
APPLICANT: FISCHER, Bernhard
APPLICANT: FALKNER, Falko-Guenther
APPLICANT: DORNER, Friedrich
APPLICANT: EIBL, Johann
TITLE OF INVENTION: A FUSION PROTEIN COMPRISING A FURIN
DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A
HETEROLOGOUS SEQUENCE
NUMBER OF SEQUENCES: 29
CORRESPONDENCE ADDRESS:
ADDRESSEE: Foley & Lardner
STREET: 3000 K Street, N.W., Suite 500
CITY: Washington
STATE: D.C.
COUNTRY: USA
ZIP: 20007-5109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/753,247
FILING DATE: 22-NOV-1995

CLASSIFICATION: 435
PRIORITY INFORMATION DATA: AT 1928/95
APPLICATION NUMBER: 04033/149
FILING DATE: 24-NOV-1995
ATTORNEY/AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29,768
REFERENCE/DOCKET NUMBER: 40433/149
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202)672-5300
TELEFAX: (202)672-5399
TELEX: 904136
INFORMATION FOR SEQ ID NO: 9:
SEQUENCE CHARACTERISTICS:
LENGTH: 719 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-753-247-9

Query Match 10.14; Score 78.5; DB 4; Length 713;
Best Local Similarity 25.34; Pred. No. 8.6; Indels 51; Gaps 13;
Matches 39; Conservative 18; Mismatches 46;

QY 1 PSKEPLRP---CRPNATLAVEKGCPCV---ITVNTTICAGYCTMTRVLOGVLPAL- 53
DB 575 PEGLEVPPESSGCKLTSS-----QACVCEGFSLHOKSCVQRCP-----PGFA 619
QY 54 PQVVCNY---RDVRFESIRLPGCPGVNPNVYVAVALSCCALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCLSCPSHA 666
QY 108 ---PL--TCDDPRFOQSSSKAPPPSLPSRLP 136
DB 667 SLDPEVTCS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 134
US-08-753-247-12
Sequence 12, Application US/08753247
Patent No. 6210929
GENERAL INFORMATION:
APPLICANT: SCHLOKAT, Uwe
APPLICANT: FISCHER, Bernhard
APPLICANT: FALKNER, Falko-Guenther
APPLICANT: KORN, Ruediger
APPLICANT: EIBL, Johannes
APPLICANT: Krammer, Ruedi J.
APPLICANT: Tekamp-Olson, Patricia
APPLICANT: Wasley, Louise
APPLICANT: Wong, Polly A.
TITLE OF INVENTION: A FUSION PROTEIN COMBINING A FURIN
TITLE OF INVENTION: DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A
TITLE OF INVENTION: HETEROLOGOUS SEQUENCE
NUMBER OF SEQUENCES: 29
CORRESPONDENCE ADDRESS:
ADDRESSEE: Foley & Lardner
STREET: 3000 K Street, N.W., Suite 500
CITY: Washington
STATE: D.C.
COUNTRY: U.S.A.
ZIP: 20007-5109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/753.247
FILING DATE: 22-NOV-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: AT 1928/95
FILING DATE: 24-NOV-1995
ATTORNEY/AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29,768

REFERENCE/DOCKET NUMBER: 40433/149
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202)672-5300
TELEFAX: (202)672-5399
TELEX: 904136
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 719 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-753-247-12

Query Match 10.14; Score 78.5; DB 4; Length 719;
Best Local Similarity 25.34; Pred. No. 8.7; Indels 51; Gaps 13;
Matches 39; Conservative 18; Mismatches 46;

QY 1 PSKEPLRP---CRPNATLAVEKGCPCV---ITVNTTICAGYCTMTRVLOGVLPAL- 53
DB 575 PEGLEVPPESSGCKLTSS-----QACVCEGFSLHOKSCVQRCP-----PGFA 619
QY 54 PQVVCNY---RDVRFESIRLPGCPGVNPNVYVAVALSCCALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCLSCPSHA 666
QY 108 ---PL--TCDDPRFOQSSSKAPPPSLPSRLP 136
DB 667 SLDPEVTCS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 135
US-07-885-972A-2
Sequence 2, Application US/07885972A
Patent No. 5460950
GENERAL INFORMATION:
APPLICANT: Barr, Phillip J.
APPLICANT: Krammer, Ruedi J.
APPLICANT: Tekamp-Olson, Patricia
APPLICANT: Wasley, Louise
APPLICANT: Wong, Polly A.
TITLE OF INVENTION: Expression of PACE in Host Cells and
TITLE OF INVENTION: Methods of Use Thereof
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Howson & Howson
STREET: Spring House Corporate Center, P.O. Box 457
CITY: Spring House
STATE: Pennsylvania
COUNTRY: U.S.A.
ZIP: 15477
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/885,972A
FILING DATE: 19-NOV-1990
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,092
FILING DATE: 26-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/620,859
FILING DATE: 29-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,443
FILING DATE: 29-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,457
FILING DATE: 29-NOV-1990
ATTORNEY/AGENT INFORMATION:

NAME: Bak, Mary E.
REGISTRATION NUMBER: 31,215
REFERENCE/DOCKET NUMBER: G15181A
TELECOMMUNICATION INFORMATION:
TELEPHONE: 215-540-9206
TELEFAX: 215-540-9206
INFORMATION FOR SEQ ID NO. 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 794 amino acids
TYPE: AMINO ACID
TOPOLOGY: linear
MOLECULE TYPE: protein
US-07-885-972A-2

Query Match 10.1%; Score 78.5; DB 1; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;
QY 1 PSEIPLRPR---CRPINATLAVEKEGCPVC---ITVNTTICAGYCPMTNTRVLOGVLPAL- 53
DB 575 PEGLPVPPESSGCKLTSS-----QACVVCCEGFSLHOKSCVQHCP-----PGFA 619
QY 54 POVCNY-----RDVFESIRLPCPGVNPVYSVALSCQALCR-RSTTDCGGRDH- 107
DB 620 PVLDTHTSTENDV--ETIRASVC-----APCHASCATCGGALTDCLSCPSHA 666
QY 108 ---PL--TCDDPRFDSSSKAPPSLPSPRLP 136
DB 667 SLDPVEQTCS----RQSQSSRESPPQ-QQPPRLP 695

RESULT 136
US-07-885-972A-4
Sequence 4, Application US/07885972A
Patent No. 5460950
GENERAL INFORMATION: Philip J.
APPLICANT: Bak, Mary E.
INVENTOR: Kaufman, Randal J.
APPLICANT: Tekamp-Olson, Patricia
APPLICANT: Wasley, Louise
APPLICANT: Wong, Polly A.
TITLE OF INVENTION: Expression of PACE In Host Cells and
METHODS OF USE THEREOF
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Howson & Howson
CITY: Spring House
STATE: Pennsylvania
COUNTRY: U.S.A.
ZIP: 19477
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/885,972A
FILING DATE: 1992-05-20
CLASSIFICATION: 43
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,092
FILING DATE: 26-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/620,859
FILING DATE: 29-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,443
FILING DATE: 29-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,457
FILING DATE: 30-NOV-1990

ATTORNEY/AGENT INFORMATION:
NAME: Bak, Mary E.
REGISTRATION NUMBER: 31,215
REFERENCE/DOCKET NUMBER: G15181A
TELECOMMUNICATION INFORMATION:
TELEPHONE: 215-540-9206
TELEFAX: 215-540-9206
INFORMATION FOR SEQ ID NO. 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 794 amino acids
TYPE: AMINO ACID
TOPOLOGY: linear
MOLECULE TYPE: protein
US-07-885-972A-4

Query Match 10.1%; Score 78.5; DB 1; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;
QY 1 PSEIPLRPR---CRPINATLAVEKEGCPVC---ITVNTTICAGYCPMTNTRVLOGVLPAL- 53
DB 575 PEGLPVPPESSGCKLTSS-----QACVVCCEGFSLHOKSCVQHCP-----PGFA 619
QY 54 POVCNY-----RDVFESIRLPCPGVNPVYSVALSCQALCR-RSTTDCGGRDH- 107
DB 620 PVLDTHTSTENDV--ETIRASVC-----APCHASCATCGGALTDCLSCPSHA 666
QY 108 ---PL--TCDDPRFDSSSKAPPSLPSPRLP 136
DB 667 SLDPVEQTCS----RQSQSSRESPPQ-QQPPRLP 695

RESULT 137
US-08-865-203-2
Sequence 2, Application US/08865203
Patent No. 5935815
GENERAL INFORMATION: Van, Willem Jan Maria
APPLICANT: van de Oord, Gerardus Maria Wilhelmina
INVENTOR: van Dulphoven, Johannes Lambertus Petrus
APPLICANT: Robroek, Antonius Johannes Maria
APPLICANT: Koning, Piet Nico Maria
TITLE OF INVENTION: Pharmaceutical Composition Having An
Endoproteolytic Activity: A Process for
TITLE OF INVENTION: Endoproteolytic Activity: A Process for
TITLE OF INVENTION: Proteins And For The (Micro)Biological
TITLE OF INVENTION: Production Of Proteins
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: KPMG PANK & BARON, LLP
CITY: Jericho
STATE: New York
COUNTRY: U.S.A.
ZIP: 11753
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/865,203
FILING DATE: 29-MAY-1997
CLASSIFICATION: 474
ATTORNEY/AGENT INFORMATION:
NAME: Tran, Jessica H.
REGISTRATION NUMBER: 40,846
REFERENCE/DOCKET NUMBER: 294-41 DIV II
TELECOMMUNICATION INFORMATION:
TELEPHONE: (516) 822-3550
TELEFAX: (516) 822-3582
TELEX:
INFORMATION FOR SEQ ID NO. 2:

```

: SEQUENCE CHARACTERISTICS:
: LENGTH: 794 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: US-08-865-203-2

Query Match 10 18: Score 78.5, DB 2: Length 794:
Best Local Similarity 25, 38, 18; Mismatches 51; Gaps 13;
Matches 39; Conservative 18;

MOY 1 PSKEPLAPR---CRPTNATLAVKEGCPVC---ITVNTTICAGTCPTMTVRLQGVLPAL- 53
DB 575 PEGLDVPPSSCKTITGS---QACVVCSEGFSLHQSCKVQCP- PGFA 619
MOY 54 POWVCNY---RDVRFESIRLPCRGVNVVYVAVLSOCALCR-RSTDGQGPQKH- 107
DB 620 PVYLQTHYSTENDY-EYIRASVC-----APCHIASCATCGPALTCLCSPSHA 666
MOY 108 ---PL--TCCDPQDSSSKAPPLSPSLRP 136
DB 667 SLDPVEQTCS---ROSQSSRSFPO-QQPRRLP 695

RESULT 18
US-08-745-880-2 Application US/08745880
: References: 2, 565425
: Patent No. 5,654,25
: GENERAL INFORMATION:
: APPLICANT: Barr, Phillip J.
: APPLICANT: Brake, Anthony J.
: APPLICANT: Kaufman, Rnadal J.
: APPLICANT: Tekamp-Olson, Patricia
: APPLICANT: Wasley, Louise
: APPLICANT: Wong, Polly A.
: TITLE OF INVENTION: Expression of PACE in Host Cells and
: NUMBER OF SEQUENCES: 1
: NUMBER OF SEQUENCES: 1
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Howson & Howson
: STREET: Spring House Corporate Center, P.O. Box 457
: CITY: Spring House
: STATE: Pennsylvania
: COUNTRY: U.S.A.
: ZIP: 19477
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patent In Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/745,880
: FILING DATE: 08-NOV-1996
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 08/480,382
: FILING DATE: 08-NOV-1995
: APPLICATION NUMBER: US 07/885,972
: FILING DATE: 20-MAY-1992
: APPLICATION NUMBER: US 07/621,092
: FILING DATE: 26-NOV-1990
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/620,859
: FILING DATE: 29-NOV-1990
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/621,443
: FILING DATE: 29-NOV-1990
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/621,457
: FILING DATE: 30-NOV-1990
: ATTORNEY/AGENT INFORMATION:
: NAME: Bak, Mary E.

```

```

1 REGISTRATION NUMBER: 31,215
2 REFERENCE/DOCKET NUMBER: G5181A
3 TELECOMMUNICATION INFORMATION:
4 TELEPHONE: 215-540-9206
5 TELEFAX: 215-540-5818
6 INFORMATION FOR SEQ ID NO: 2:
7 SEQUENCE CHARACTERISTICS:
8 LENGTH: 794 amino acids
9 TYPE: amino acid
10 TOPOLOGY: linear
11 MOLECULE TYPE: protein
12
13 US-08-745-880-2
14
15 Query Match 10.1%; Score 78.5; DB 2; Length 794;
16 Best Local Similarity 25.3%; Pred.No.9.7;
17 Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;
18
19 QY 1 PSKEPLRPR---CRPNTNATLAVEKGGPCV---ITVNTTTCACGCGPMPRVIVGLVLPAL- 53
20 DB 575 PGLVFPVPESSQCTLS-----QPCVCEGSGSLKQVNC-----PGFA 619
21 QY 54 PQVNCV---RDVRESIRLPCCRGVMPVYVALSQCACALCR-RSTDGCGKDKR- 107
22 DB 630 PQVLQTHYSTENDV---ETIRASVC-----APCHASCATCGCPALTDCLSQPSHA 666
23
24 QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPSRLP 136
25 DB 667 SLDPVETCS-----RQSSGSRSPQ-QQPPALP 695
26
27 RESULT 139
28 US-08-745-880-4
29 Sequence 4, Application US/08745880
30 Patent No. 5963425
31 GENERAL INFORMATION:
32 APPLICANT: Barf, Philip J.
33 APPLICANT: Brake, Anthony J.
34 APPLICANT: Kaufman, Randall J.
35 APPLICANT: Kaufman, Joseph Patricia
36 APPLICANT: Masle, Louise
37 APPLICANT: Wong, Polly A.
38
39 TITLE OF INVENTION: Expression of PACE in Host Cells and
40 TITLE OF INVENTION: Methods of Use Thereof
41 NUMBER OF SEQUENCES: 7
42
43 CORRESPONDENCE ADDRESS:
44 ADDRESSEE: HOWSON & HOWSON
45 STREET: Spring House Corporate Center, P.O. Box 457
46 CITY: Spring House
47 STATE: Pennsylvania
48 COUNTRY: U.S.A.
49 ZIP: 19477
50
51 COMPUTER READABLE FORM:
52 MEDIUM TYPE: Floppy disk
53 COMPUTER: IBM PC compatible
54 OPERATING SYSTEM: PC-DOS/MS-DOS
55 SOFTWARE: PatentIn Release #1.0, Version #1.25
56
57 CURRENT APPLICATION DATA:
58 APPLICATION NUMBER: 08/745,880
59 FILING DATE: 08-NOV-1996
60 CLASSIFICATION: 435
61
62 PRIOR APPLICATION DATA:
63 APPLICATION NUMBER: US 08/480,382
64 FILING DATE: 07-JUN-1995
65 APPLICATION NUMBER: US 07/885,972
66 FILING DATE: 20-MAY-1992
67 APPLICATION NUMBER: US 07/621,092
68 FILING DATE: 26-NOV-1990
69
70 PRIOR APPLICATION DATA:
71 APPLICATION NUMBER: US 07/620,859
72 FILING DATE: 26-NOV-1990
73 PRIOR APPLICATION DATA:
74 APPLICATION NUMBER: US 07/621,443
75 FILING DATE: 29-NOV-1990

```

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,457
FILING DATE: 30-NOV-1990
ATTORNEY/AGENT INFORMATION:
NAME: Mark M. E.
REGISTRATION NUMBER: 31,215
REFERENCE/DOCKET INFORMATION:
TELEPHONE: 215-540-9206
TELEFAX: 215-540-5818
INFORMATION FOR SEQ ID NO: 4:
LENGTH: 794 amino acids
SEQUENCE CHARACTERISTICS:
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-745-880-4

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR--CRPINATLAVEKEGCPVC---ITVNTTICAGTCPTMTVLQGVLPAL- 53
DB 575 PGLPVPSSGCKTLTSS-----QACVCEGFSLHOKSCVQHCP-----PGFA 619
QY 54 PLYVYNY---RDVRESIRLPCPGVNPVYVAVALSCQALCR-RSTTDCGGPKDH- 107
DB 620 PQLVLYHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCSLCPSHA 666
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136
DB 667 SLDPVBTCS----RQSSRSRSPQ-QQPPRLP 695

RESULT 140
US-08-480-382-2
Sequence 2, Application US/08480382
Patent No. 5986079

GENERAL INFORMATION:
APPLICANT: Barr, Philip J.
APPLICANT: Brake, Anthony J.
APPLICANT: Kaufman, Randal J.
APPLICANT: Tekamp-Olson, Patricia
APPLICANT: Wasley, Louise
APPLICANT: Wong, Polly A.
TITLE OF INVENTION: Expression of PACE in Host Cells and
METHODS OF USE THEREOF
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Howson & Howson
STREET: Spring House Corporate Center, P.O. Box 457
CITY: Spring House
STATE: Pennsylvania
COUNTRY: U.S.A.
ZIP: 19477

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480,382
FILING DATE: 07-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/885,972
FILING DATE: 20-MAY-1992
APPLICATION NUMBER: US 07/621,092
FILING DATE: 26-NOV-1990
APPLICATION NUMBER: US 07/620,859
FILING DATE: 29-NOV-1990

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,443
FILING DATE: 29-NOV-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/621,457
FILING DATE: 30-NOV-1990
ATTORNEY/AGENT INFORMATION:
NAME: Mark M. E.
REGISTRATION NUMBER: 31,215
REFERENCE/DOCKET NUMBER: G15181A
TELEPHONE: 215-540-9206
TELEFAX: 215-540-5818
INFORMATION FOR SEQ ID NO: 2:
LENGTH: 794 amino acids
SEQUENCE CHARACTERISTICS:
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-480-382-2

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR--CRPINATLAVEKEGCPVC---ITVNTTICAGTCPTMTVLQGVLPAL- 53
DB 575 PGLPVPSSGCKTLTSS-----QACVCEGFSLHOKSCVQHCP-----PGFA 619
QY 54 PLYVYNY---RDVRESIRLPCPGVNPVYVAVALSCQALCR-RSTTDCGGPKDH- 107
DB 620 PQLVLYHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCSLCPSHA 666
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136
DB 667 SLDPVBTCS----RQSSRSRSPQ-QQPPRLP 695

RESULT 141
US-08-480-382-4
Sequence 4, Application US/08480382
Patent No. 5986079
GENERAL INFORMATION:
APPLICANT: Barr, Philip J.
APPLICANT: Brake, Anthony J.
APPLICANT: Kaufman, Randal J.
APPLICANT: Tekamp-Olson, Patricia
APPLICANT: Wasley, Louise
APPLICANT: Wong, Polly A.
TITLE OF INVENTION: Expression of PACE in Host Cells and
METHODS OF USE THEREOF
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Howson & Howson
STREET: Spring House Corporate Center, P.O. Box 457
CITY: Spring House
STATE: Pennsylvania
COUNTRY: U.S.A.
ZIP: 19477
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480,382
FILING DATE: 07-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/885,972
FILING DATE: 20-MAY-1992
APPLICATION NUMBER: US 07/621,092
FILING DATE: 26-NOV-1990

;; PRIOR APPLICATION DATA:
;; APPLICANT: MORAN, THOMAS F.
;; FILING DATE: 29-NOV-1990
;; PRIOR APPLICATION DATA: US 07/620,859
;; FILING DATE: 29-NOV-1990
;; PRIOR APPLICATION DATA: US 07/621,443
;; FILING DATE: 29-NOV-1990
;; PRIOR APPLICATION DATA: US 07/621,457
;; FILING DATE: 30-NOV-1990
;; ATTORNEY/AGENT INFORMATION:
;; NAME: BAK, MARY E.
;; REGISTRATION NUMBER: 31,215
;; REFERENCE/DOCKET NUMBER: G15181A
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: 215-540-5806
;; TELEFAX: 215-540-5818
;; INFORMATION FOR SEQ ID NO: 4:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 794 amino acids
;; TYPE: amino acid
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
;; US-08-480-382-4

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR---CRPINATLAVEKGPVC---ITVNTTICAGYCPMTTRVLQGVLPAL- 53
DB 575 PEGLPVPPESSGCKLTSS-----QACVVCBEGFSLHQKSCVQHC-----PGFA 619
QY 54 PQVCNT---RDVRESIRLPGCPGVNPVYVAVALSCCALCR-RSTTDGGPKDH- 107
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCTCGPALTCLSCPSHA 666
QY 108 ---PL--TCDDPRFQSSSKAPPSLPSPRLP 136
DB 667 SLPVVEQTCS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 142
US-07-849-420-2
Sequence 2, Application US/07849420
GENERAL INFORMATION:
APPLICANT: van de Ven, Willem Jan Marie;
APPLICANT: van den Ouwendland, Anna Maria Wilhelmina;
APPLICANT: van Duijnhoven, Johannes Lambertus Petrus;
APPLICANT: Robroek, Antonius Johannes Maria
APPLICANT: Koning, Piet Nico Maria
TITLE OF INVENTION: Pharmaceutical Composition Having An
TITLE OF INVENTION: Endoproteolytic Activity; A Process for
TITLE OF INVENTION: Endoproteolytically Processing (Precursor)
TITLE OF INVENTION: Proteins And P4r The (Micro)Biological
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: COOPER, DUNHAM
STREET: 30 Rockefeller Plaza
CITY: New York
STATE: New York
COUNTRY: U.S.A.
ZIP: 10112
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/849,420
FILING DATE: 19920624
CLASSIFICATION: 415

;; ATTORNEY/AGENT INFORMATION:
;; NAME: Moran, Thomas F.
;; REGISTRATION NUMBER: 31,215
;; REFERENCE/DOCKET NUMBER: G15181A
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: (212) 977-9550
;; TELEFAX: (212) 977-9550
;; INFORMATION FOR SEQ ID NO: 2:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 794 amino acids
;; TYPE: amino acid
;; STRANDEDNESS: single
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
;; US-07-849-420-2

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR---CRPINATLAVEKGPVC---ITVNTTICAGYCPMTTRVLQGVLPAL- 53
DB 575 PEGLPVPPESSGCKLTSS-----QACVVCBEGFSLHQKSCVQHC-----PGFA 619
QY 54 PQVCNT---RDVRESIRLPGCPGVNPVYVAVALSCCALCR-RSTTDGGPKDH- 107
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCTCGPALTCLSCPSHA 666
QY 108 ---PL--TCDDPRFQSSSKAPPSLPSPRLP 136
DB 667 SLPVVEQTCS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 143
US-07-849-420-2
Sequence 2, Application US/09253854
GENERAL INFORMATION:
APPLICANT: van de Ven, Willem Jan Marie;
APPLICANT: van den Ouwendland, Anna Maria Wilhelmina;
APPLICANT: van Duijnhoven, Johannes Lambertus Petrus;
APPLICANT: Robroek, Antonius Johannes Maria; and
APPLICANT: Koning, Piet Nico Maria
TITLE OF INVENTION: Pharmaceutical Composition Having An
TITLE OF INVENTION: Endoproteolytic Activity; A Process for
TITLE OF INVENTION: Endoproteolytically Processing (Precursor)
TITLE OF INVENTION: Proteins And P4r The (Micro)Biological
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: HOFFMANN & BARON, LLP
STREET: 350 Jericho Turnpike
CITY: Jericho
STATE: New York
COUNTRY: U.S.A.
ZIP: 11753
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/253,854
FILING DATE: Unassigned
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Tran, Jessica H.
REGISTRATION NUMBER: 40,846
REFERENCE/DOCKET NUMBER: G15181A
TELEPHONE: (516) 822-3550
TELEFAX: (516) 822-3582

```

;
; TELEX:
; INFORMATION FOR SEQ ID NO: 2:
; SOURCE CHARACTERISTICS:
; LENGTH: 794
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-253-854-2

```

```

Query Match      10.1%; Score 78.5; DB 4; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR---CRPTNATLAVEKCPVC---ITVNTTICAGCPTMTVRLQVLPAL- 53
DB 575 PEGLPVPSSGCKTLTSS-----QACVCEBGSLSLQKSCVORCP-----PGFA 619

QY 54 PQVVCNY----RDVRFESIRLPGCGRGNVYVAVALSCOCALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCATCGGPAITDCLSCPSHA 666

QY 108 ---PL--TCDDPRFODSSSKAPPSLPSRLP 136
DB 667 SLDPVEUTCS-----RQSQSSRESPPQ-QQPPRLP 695

```

RESULT 144

```

US-08-955-424-2
; Sequence 2, Application US/08955424
; Patent No. 6274365
; GENERAL INFORMATION:
; APPLICANT: Van de Ven, Willem Jan Marie
; APPLICANT: Van de Ouweland, Anna Maria Wilhelmina
; APPLICANT: Van Duinhoven, Johannes Lambertus Petrus
; APPLICANT: Konings, Pieter Nico Maria
; APPLICANT: Koster, Antonius Johannes Maria
; TITLE OF INVENTION: PRODUCTION OF PROTEINS HAVING AN ENDOPEPTIDOLYTIC
; TITLE OF INVENTION: ACTIVITY: A PROCESS FOR ENDOPEPTIDOLYTICALLY PROCESSING
; TITLE OF INVENTION: (PRECURSOR) PROTEINS AND FOR THE (MICRO)BIOLOGICAL
; FILE REFERENCE: SEQUENCE LISTINGS 1-12 294-41 DIV/FWC
; CURRENT APPLICATION NUMBER: US/08/955,424
; CURRENT FILING DATE: 1997-10-22
; EARLIER APPLICATION NUMBER: 08/568,152
; EARLIER FILING DATE: 1995-06-12
; EARLIER APPLICATION NUMBER: 07/849,420
; EARLIER FILING DATE: 1992-06-24
; EARLIER APPLICATION NUMBER: PCT/NL90/00151
; EARLIER FILING DATE: 1990-10-21
; NUMBER OF SEQ ID NOS: 12
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
; LENGTH: 794
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-08-955-424-2

```

```

Query Match      10.1%; Score 78.5; DB 4; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR---CRPTNATLAVEKCPVC---ITVNTTICAGCPTMTVRLQVLPAL- 53
DB 575 PEGLPVPSSGCKTLTSS-----QACVCEBGSLSLQKSCVORCP-----PGFA 619

QY 54 PQVVCNY----RDVRFESIRLPGCGRGNVYVAVALSCOCALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCATCGGPAITDCLSCPSHA 666

QY 108 ---PL--TCDDPRFODSSSKAPPSLPSRLP 136
DB 667 SLDPVEUTCS-----RQSQSSRESPPQ-QQPPRLP 695

```

```

RESULT 145
US-09-095-443-2
; Sequence 2, Application US/09095443
; Patent No. 6274365
; GENERAL INFORMATION:
; APPLICANT: Plozman, Gregory
; APPLICANT: Peles, Elor
; TITLE OF INVENTION: DIAGNOSIS AND TREATMENT
; TITLE OF INVENTION: OF ALP RELATED DISORDERS
; NUMBER OF SEQUENCES: 8
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Lyon & Lyon
; STREET: 633 West Fifth Street
; CITY: San Diego
; STATE: California
; COUNTRY: U.S.A.
; ZIP: 90071-2066
; COMPUTER READABLE FORM:
; MEDIUM TYPE: 3.5" Diskette, 1.44 MB
; MEDIUM TYPE: storage
; OPERATING SYSTEM: IBM P.C. DOS 5.0
; SOFTWARE: FastSeq for Windows 2.0
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/095,443
; FILING DATE: Herewith
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 60/049,477
; FILING DATE: June 12, 1997
; ATTORNEY/AGENT INFORMATION:
; NAME: Warburg, Richard J.
; REGISTRATION NUMBER: 32,327
; REFERENCE/DOCKET NUMBER: 235/055
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (213) 955-0400
; TELEFAX: (213) 955-0440
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1274 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-09-095-443-2

Query Match      10.1%; Score 78.5; DB 4; Length 1274;
Best Local Similarity 31.0%; Pred. No. 17;
Matches 31; Conservative 12; Mismatches 38; Indels 19; Gaps 5;

QY 40 PTMTVRLQVLPALPGVYVYVRFESIRLPGCGRGNVYVAVALSCOCALCRSTT 99
DB 651 PLHTLPYGP--PAGDPLPAHSGALPFPF---PGPPQPHPLAYGAPS-----T 695

QY 100 DCGGPKDPLTCDPRFODSSSKAPPSL-PSPSRLPGP 138
DB 696 RPNQGPQANPLTNGP---SSAQGSTPSPLVPSAPSPGP 732

RESULT 146
US-08-484-438-8
; Sequence 8, Application US/08484438
; Patent No. 5811098
; Patent No. 5811098 5780031
; GENERAL INFORMATION:
; APPLICANT: Plozman, Gregory D.
; APPLICANT: Culouscou, Jean-Michel
; APPLICANT: Shoyab, Mohammed
; APPLICANT: Stegall, Clay B.

```

```

; APPLICANT: Hellstr m, Ingegerd
; APPLICANT: Hellstr m, Karl E.
; TITLE OF INVENTION: HEMA HUMAN RECEPTOR TYROSINE KINASE
; NUMBER OF SEQUENCES: 42
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Penile & Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: U.S.A.
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA: US/08/484,438
; APPLICATION NUMBER: US/08/484,438
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/323,442
; FILING DATE: 14-OCT-1994
; APPLICATION NUMBER: US 08/150,704
; FILING DATE: 10-NOV-1993
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/981,165
; FILING DATE: 24-NOV-1992
; CLASSIFICATION: 530
; ATTORNEY/AGENT INFORMATION:
; NAME: Misrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 5624-230
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 689-9800/9741
; TELEFAX: 66141 PENIE
; INFORMATION FOR SEQ ID NO: 8:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1255 amino acids
; TYPE: amino acid
; STRANDEDNESS: unknown
; TOPOLOGY: unknown
; MOLECULE TYPE: protein
; US-08-484-438-8

Query Match 9.7%; Score 75.5; DB 2; Length 1255;
Best Local Similarity 26.2%; Pred. No. 31;
Matches 38; Conservative 13; Mismatches 47; Indels 47; Gaps 9;

QY 10 CRPNTATLAVKGGCPVCTVNTTICAGVCTPTTRVLQGV-----LPLALPQ----- 55
Db 511 CHOLCARRALLGSGPTQVNCVQFLEGOECYECRVLQGLPREYVNRHCLPCHPEQCPQ 570
QY 56 -----VVC-NYRDVRFESIRLPGCPRGVNVVSYAVAL-----SCO-CA 92
Db 571 NGSVTCFGEADOCVACARYKDPFFCVAR---CPGKVKPDLSTYMPINKEPDEEGACQPCP 627
QY 93 L-CRRSTTDC---GGPKDH---PLT 110
Db 628 INCTHSCVLDLDDKGFQAKQASPUT 652

RESULT 147
US-08-347-594A-2
; Sequence 2, Application US/08347594A
; Patent No. 5849536
; GENERAL INFORMATION:
; APPLICANT: Garfinkel, Leonard
; APPLICANT: Richter, Tamar
; TITLE OF INVENTION: CLONING AND PRODUCTION OF HUMAN VON
; WILLEBRAND FACTOR GPIIb BINDING DOMAIN POLYPEPTIDES AND

```

```

; TITLE OF INVENTION: METHODS OF USING SAME
; NUMBER OF SEQUENCES: 4
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: John P. White
; STREET: 1185 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA: US/08/347-594A
; APPLICATION NUMBER: US/08/347-594A
; FILING DATE: 08-SEP-1994
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: White, John P.
; REGISTRATION NUMBER: 28,678
; REFERENCE/DOCKET NUMBER: 36537-B2
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 212-278-0400
; TELEFAX: 212-391-0525
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 2050 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-347-594A-2

Query Match 9.7%; Score 75.5; DB 2; Length 2050;
Best Local Similarity 23.4%; Pred. No. 55;
Matches 39; Conservative 15; Mismatches 58; Indels 55; Gaps 9;

QY 1 PSKEPLRPRGRINA-TLAVKEG-----CPVCI-----TWNTICAGVC 39
Db 1476 PDKVLESGCVPEEACTCGICGCVQHFLEAVVDPHQPCOICTCLSGRVNCT--TPCP 1533
QY 40 PT-----MTRVLQGLPALPOVYVNYRDVRFESIRLPGCPRGVNVVSYAVALSC 89
Db 1534 PTAKPTGCLGEYARLRQNAOCCPEYECVCPYSCDLPVPVHCERGLQPTLT----- 1586
QY 90 OCALCRSTTDCGGPKDHPLTCDPRFDSSSSSKAPPSPSLPSRLP 136
Db 1587 NPGEKRNFT-CACRKE-----ECKRVSPSPCP-PHRLP 1618

RESULT 148
US-08-503-024-7
; Sequence 7, Application US/08509024B
; Patent No. 6291207
; GENERAL INFORMATION:
; APPLICANT: SPEAR, Patricia G.
; APPLICANT: MONTGOMERY, Rebecca I.
; TITLE OF INVENTION: HERPES VIRUS ENTRY RECEPTOR PROTEIN
; FILE REFERENCE: 0290-1
; CURRENT APPLICATION NUMBER: US/08/509,024B
; CURRENT FILING DATE: 1995-07-25
; INVENTOR: SPEAR, Patricia G.
; SOFTWARE: Patent in Ver. 2.0
; SEQ ID NO 7
; LENGTH: 419
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-08-503-024-7

Query Match 9.7%; Score 75; DB 4; Length 419;
Best Local Similarity 21.9%; Pred. No. 10;
Matches 42; Conservative 12; Mismatches 72; Indels 66; Gaps 9;

```


Fri Oct 11 17:40:47 2002

us-09-813-398-3.default.ra

Page 63

APPLICATION NUMBER: US 08/735,041
FILING DATE: 22-OCT-1996
ATTORNEY/AGENT INFORMATION:
NAME: Mazza, Richard J.
REGISTRATION NUMBER: 27,657
REFERENCE/DOCKET NUMBER: A-414
TELEPHONE: 805.499.6751
TELEFAX: 805.447.4112
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 539 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-190-476B-2

Query Match
Best Local Similarity 23.2%; Pred. No. 15;
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKSGPCVITNTTICAGYCTMTTRVLOGVLPALPOVVC 58
DB 240 PARTSPSPRCGHPVNFVLP-----TNNAMCP--COTWKPSTSRPTSPQATS 288
QY 59 NYRDVRFESIRLPGCGVNVVSYVALSCOCALC-----BRSSTDCGG 103
DB 289 SW-----TSLLQLGQLEPG-----CAECNAAPELANGALELESRSNSTLDPG- 328
QY 104 PKDRPLTCDDPRFQDSSSSKAP--PPSLPSPSLRP 136
DB 329 -----KPEMKSPNTTTPHVAEGPEASRPP 354

RESULT 152
US-09-190-889A-2
Sequence 2, Application US/09190889A
Patent No. 6075008
GENERAL INFORMATION:
APPLICANT: Farrell, Catherine L.
APPLICANT: Yabkowitz, Rachel
TITLE OF INVENTION: PLACENTAL-DERIVED PROSTRATE GROWTH
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Angen Inc.
STREET: 1840 De Havilland Drive
CITY: Thousand Oaks
STATE: California
COUNTRY: USA
ZIP: 91320-1789
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PC Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/190.889A
FILING DATE: 22-OCT-1996
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/735,041
FILING DATE: 22-OCT-1996
ATTORNEY/AGENT INFORMATION:
NAME: Mazza, Richard J.
REGISTRATION NUMBER: 27,657
REFERENCE/DOCKET NUMBER: A-414
TELEPHONE: 805.499.6751
TELEFAX: 805.447.4112
INFORMATION FOR SEQ ID NO: 2:

SEQUENCE CHARACTERISTICS:
LENGTH: 539 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-190-889A-2
Query Match
Best Local Similarity 23.2%; Pred. No. 15;
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKSGPCVITNTTICAGYCTMTTRVLOGVLPALPOVVC 58
DB 240 PARTSPSPRCGHPVNFVLP-----TNNAMCP--COTWKPSTSRPTSPQATS 288
QY 59 NYRDVRFESIRLPGCGVNVVSYVALSCOCALC-----BRSSTDCGG 103
DB 289 SW-----TSLLQLGQLEPG-----CAECNAAPELANGALELESRSNSTLDPG- 328
QY 104 PKDRPLTCDDPRFQDSSSSKAP--PPSLPSPSLRP 136
DB 329 -----KPEMKSPNTTTPHVAEGPEASRPP 354
RESULT 153
US-09-190-938B-2
Sequence 2, Application US/09190938B
Patent No. 6197939
GENERAL INFORMATION:
APPLICANT: Farrell, Catherine L.
APPLICANT: Yabkowitz, Rachel
TITLE OF INVENTION: PLACENTAL-DERIVED PROSTRATE GROWTH
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Angen Inc.
STREET: 1840 De Havilland Drive
CITY: Thousand Oaks
STATE: California
COUNTRY: USA
ZIP: 91320-1789
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PC Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/190.938B
FILING DATE: 12-NOV-1998
CLASSIFICATION: <Unknown>
ATTORNEY/AGENT INFORMATION:
NAME: Mazza, Richard J.
REGISTRATION NUMBER: 27,657
REFERENCE/DOCKET NUMBER: A-414
TELEPHONE: 805.499.6751
TELEFAX: 805.447.4112
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 539 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-190-938B-2

Query Match
Best Local Similarity 23.2%; Pred. No. 15;
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRRC--RPINATLAVEKEGCPVCTVNTICAGCPTMTVRLQGLPALPOVVC 58
 DB 240 PARTPSSPRCSGHPVNFVLEA-----TMNAMMCP--COTWKPSTSSRPTSPQATS 288
 QY 59 NYRDVRESIRLPGCPRGVNPVSYAVALSCOCALC-----RRSTDCGG 103
 DB 289 SW-----TSQLQLGOLPEG-----CAECAAAPELANGALESRNSTLDPG- 328
 QY 104 PKOHLTCDDPRFQDSSSSKAP--PPSLPSPSRLP 136
 DB 329 -----KPEMKKSPNTTTPHVPAGGPEASRPP 354

RESULT 154
 PCT-US95-09261-2
 ; Sequence 2, Application PC/TUS9509261
 ; GENERAL INFORMATION:
 ; APPLICANT: NAME: BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM
 ; APPLICANT: STREET: 201 West 7th Street
 ; APPLICANT: CITY: Austin
 ; APPLICANT: STATE: Texas
 ; APPLICANT: COUNTRY: United States of America
 ; APPLICANT: POSTAL CODE: 78701
 ; APPLICANT: TELEPHONE NO: (512)499-4462
 ; APPLICANT: TELEFAX: (512)499-4523
 ; TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR THE EXPRESSION OF
 ; TYPE OF INVENTION: A BONE AND PROSTATE DERIVED GROWTH FACTOR
 ; NUMBER OF SEQUENCES: 2
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: Arnold, White & Durkee
 ; CITY: Houston
 ; STATE: Texas
 ; COUNTRY: UNITED STATES OF AMERICA
 ; ZIP: 77210

COMPUTER READABLE FORM:
 MEDIUM TYPE: Floppy disk
 OPERATING SYSTEM: PC-DOS/MS-DOS/ASCII
 SOFTWARE: Patent Release #1.0, Version #1.30
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: PCT/US95/09261
 FILING DATE: CONCURRENTLY HERewith
 CLASSIFICATION:
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/283,701
 FILING DATE: 01-AUG-1994
 CLASSIFICATION:
 ATTORNEY/AGENT INFORMATION:
 NAME: SERICH CLARK
 REGISTRATION NUMBER: 34,430
 REFERENCE/DOCKET NUMBER: UTFC422P--
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: (512) 418-3000
 TELEFAX: (713) 789-2679
 TELEX: 79-0924
 INFORMATION FOR SEQ ID NO: 2:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 539 amino acids
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 PCT-US95-09261-2

Query Match 9.6%; Score 74.5; DB 5; Length 539;
 Best Local Similarity 23.2%; Pred. No. 15;
 Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;
 QY 1 PSKEPLRRC--RPINATLAVEKEGCPVCTVNTICAGCPTMTVRLQGLPALPOVVC 58
 DB 240 PARTPSSPRCSGHPVNFVLEA-----TMNAMMCP--COTWKPSTSSRPTSPQATS 288

QY 59 NYRDVRESIRLPGCPRGVNPVSYAVALSCOCALC-----RRSTDCGG 103
 DB 289 SW-----TSQLQLGOLPEG-----CAECAAAPELANGALESRNSTLDPG- 328
 QY 104 PKOHLTCDDPRFQDSSSSKAP--PPSLPSPSRLP 136
 DB 329 -----KPEMKKSPNTTTPHVPAGGPEASRPP 354

RESULT 155
 US-08-976-255-11
 ; Sequence 11, Application US/08976255
 ; Patent No. 6136581
 ; GENERAL INFORMATION:
 ; APPLICANT: Jono, Keith E.
 ; APPLICANT: PLOWMAN, Gregory
 ; TITLE OF INVENTION: KINASE GENES AND USES
 ; NUMBER OF SEQUENCES: 53
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: Jono, Keith E.
 ; STREET: 613 West Fifth Street
 ; CITY: Suite 4700
 ; CITY: Los Angeles
 ; STATE: California
 ; COUNTRY: U.S.A.
 ; ZIP: 90071-2066

COMPUTER READABLE FORM:
 MEDIUM TYPE: 3.5" Diskette, 1.44 Mb
 OPERATING SYSTEM: IBM P.C. DOS 5.0
 SOFTWARE: FastSeq for Windows 2.0
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: US/08/976,255
 FILING DATE: No. 6136581ember 21, 1997
 CLASSIFICATION: 435
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: 60/031,675
 FILING DATE: November 22, 1996
 ATTORNEY/AGENT INFORMATION:
 NAME: WACHS, Richard J.
 REGISTRATION NUMBER: 32,327
 REFERENCE/DOCKET NUMBER: 229/182
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: (213) 489-1600
 TELEFAX: (213) 955-0440
 TELEX: 67-3510
 INFORMATION FOR SEQ ID NO: 11:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 1384 amino acids
 TYPE: amino acid
 STRANDEDNESS: single
 TOPOLOGY: linear
 MOLECULE TYPE: Protein
 US-08-976-255-11

Query Match 9.6%; Score 74.5; DB 4; Length 1384;
 Best Local Similarity 25.4%; Pred. No. 44;
 Matches 32; Conservative 10; Mismatches 45; Indels 39; Gaps 6;
 QY 52 ALPOVVCNRYDRESIRLPGCPRGVNPVSYAVALSCOCALC-----YAVALSOCALCRRSTDC 101
 DB 499 APTATSGTARLQGLCAPDGPVVPVLSNAUSPSLGSSEYFIRLE-ENAPAGAHUDDC 557
 QY 102 GG-KRQHELTCDPRFQDSSSSKAP--PPSLP-----SPS 133
 DB 558 AGCAPSPATADQDDSDGTAASLANEPLUGHPVDPVWNGRDYPRSLARDLCPGS 617
 QY 134 RLPGPS 139
 DB 618 RSPSPS 623

```

RESULT 156
US-08-744-670-5
; Sequence 5, Application US/08744670
; Patent No. 5058710
; GENERAL INFORMATION:
; APPLICANT: Bandman, Olga
; APPLICANT: Goli, Svyra K.
; APPLICANT: Murty, Lynn E.
; TITLE OF INVENTION: TUNOR-ASSOCIATED KAZAL INHIBITOR
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Incyte Pharmaceuticals, Inc.
; STREET: 3174 Porter Drive
; CITY: Palo Alto
; STATE: CA
; COUNTRY: US
; ZIP: 94304
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette
; OPERATING SYSTEM: Compatible
; SOFTWARE: FASTSO Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/744,670
FILING DATE: Filed Herewith
PRIOR APPLICATION NUMBER:
FILING DATE:
ATTORNEY/AGENT INFORMATION:
REGISTRATION NUMBER: 36,749
REFERENCE/Docket NUMBER: PP-0155 US
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-855-0555
TELEFAX: 415-845-4166
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
LENGTH: 84 amino acids
TYPE: single
TOPOLGY: linear
IMMEDIATE SOURCE:
LIBRARY: GenBank
CLONE: 184479
US-08-744-670-5
Query Match          9.5%   Score 73.5; DB 2; Length
Best Local Similarity 38.3%   Pred. No. 2.3; 21; Index
Matches 18; Conservative 5; Mismatches 53
OY      53 LPO--VCNRYVRFESRLPGCPRGVPV-SVAVALSCGACLRZ
DB      22 IPOGLFSKRTPCNQYLPGCPRHFPNPVGSDMSIYANECLKMK

RESULT 157
US-09-149-933-5
; Sequence 5, Application US/09149933
; Patent No. 5058699
; GENERAL INFORMATION:
; APPLICANT: Bandman, Olga
; APPLICANT: Goli, Svyra K.
; APPLICANT: Murty, Lynn E.
; TITLE OF INVENTION: TUNOR-ASSOCIATED KAZAL INHIBITOR
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Incyte Pharmaceuticals, Inc.
; STREET: 3174 Porter Drive
; CITY: Palo Alto
; STATE: CA
; COUNTRY: US
; ZIP: 94304
; COMPUTER READABLE FORM:

```

```

1 MEDIUM TYPE: Diskette
2 COMPUTER: IBM Compatible
3 OPERATING SYSTEM: DOS
4 SOFTWARE: FastSeq Version 2.0
5 CURRENT APPLICATION DATA:
6 APPLICATION NUMBER: US/09/149,933
7 FILING DATE: Filed Herewith
8 PRIOR APPLICATION DATA:
9 APPLICATION NUMBER:
10 FILING DATE: INFORMATION:
11 NAME/ADDRESS: LUCY J
12 NAME/BILLING: LUCY J
13 REGISTRATION NUMBER: 36,749
14 REFERENCE/DOCKET NUMBER: PF-0155 US
15 TELECOMMUNICATION INFORMATION:
16 TELEPHONE: 415-855-0555
17 TELEFAX: 415-845-4166
18 INFORMATION FOR SEQ ID NO: 5:
19 SEQUENCE CHARACTERISTICS:
20 LENGTH: 84 amino acids
21 TYPE: amino acids
22 STRAIGHTNESS: single
23 TOPOLOGY: linear
24 IMMEDIATE SOURCE:
25 LIBRARY: GenBank
26 CLONE: 184479
27 US-09-149-933-5
28
29 Query Match 9.54; Score 73.5; DB 2: Length 84;
30 Best Local Similarity 38.34; Pred. No. 2.3;
31 Matches 10; Conservative 5; Mismatches 21; Indels 3; Gaps 2
32
33 QY 53 LPO-VVCNVDRVFESIRLPGCPGVVYVYVAVALSCCALCRR 96
34 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
35 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
36 DB 22 LPQGLFSKYRTPCNSQYRLPCPRHFNPVCGSDMSTYANETCNK 68
37 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
38 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
39
40 RESULT 158
41 US-09-171-945-24 Application US/09171945
42 Sequence 24.64; Pred. No. 1.0;
43 Pct/Conservative 97/7599
44 GENERAL INFORMATION:
45 APPLICANT: Emery, Stephen
46 APPLICANT: Copley, Clive Graham
47 APPLICANT: Edge, Michael Derek
48 TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said
49 TITLE OF INVENTION: Antibody, and Their Therapeutic Use in an Adept System
50 FILE REFERENCE: Monoclonal Antibody to CEA
51 FILE REFERENCE: Nucleotide No. 177/271,945
52 CURRENT FILING DATE: 1998-10-29
53 PRIOR APPLICATION NUMBER: GB9703103.3
54 PRIOR FILING DATE: 1997-02-14
55 PRIOR APPLICATION NUMBER: GB9609405.7
56 PRIOR FILING DATE: 1996-05-04
57 PRIOR APPLICATION NUMBER: PCT/GB97/01165
58 PRIOR FILING DATE: 1997-04-29
59 NUMBER OF SEQ ID NOS: 131
60 SOFTWARE: 24
61 SOURCE: 24
62 SUBMITTER: 24
63 LENGTH: 167
64 TYPE: PRT
65 ORGANISM: Artificial Sequence
66 FEATURE:
67 OTHER INFORMATION: Description of Artificial Sequence: humanized
68 US-09-171-945-24
69
70 Query Match 9.54; Score 73.5; DB 4: Length 167;
71 Best Local Similarity 28.11; Pred. No. 5;
72 Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;
73
74 QY 1 DSPEFLRQPCRPINATLAVKEGC-----PVCITVNTICAGCPTKTRVLOGV-LP 51
75 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
76 DB 6 DSPEFLRQPCRPINATLAVKEGC-----LQCLVKDYDPEPTVSMSNGALTSQVHTFPVLOSSGLY 63
77 : : : : : : : : : : : : : : : : : : : : : : : : : : : :
78 : : : : : : : : : : : : : : : : : : : : : : : : : : : :

```

QY 52 ALPOVY-----CNVR-----DVFESIRLP-----GCRGVNPPVSYA 84
Db 64 SLSSVTVVSSSLGTQYTCNVNHRKPSNWKDKRVE-LATPLDGTHTCPCPPEP-----117
QY 85 VALSCOC-ALCRNSTCCGPK--DHPLTCDPRFOQSSSKAPP--PSLPSPSRLPG 137
Db 118 --KSCDTPPCPR-----CPEPKSCDTPPC--PRCPERKSCDTPPCPCPAPELLOG 167

RESULT 159
US-09-171-945-95
; Sequence 95, Application US/09171945
; Patent No. 6277599
; GENERAL INFORMATION:
; APPLICANT: Emery, Stephen
; APPLICANT: Copley, Clive Graham
; APPLICANT: Esposito, Michael
; APPLICANT: Esposito, Michael
; TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said
; TITLE OF INVENTION: Antibody, and Their Therapeutic Use in an Adept System
; FILE REFERENCE: Monoclonal Antibody to CEA
; CURRENT APPLICATION NUMBER: US/09/171,945
; PRIOR FILING DATE: 1998-10-29
; PRIOR APPLICATION NUMBER: GB9703103.3
; PRIOR FILING DATE: 1997-02-14
; PRIOR APPLICATION NUMBER: GB9609405.7
; PRIOR FILING DATE: 1996-05-05
; PRIOR APPLICATION NUMBER: PCT/GB97/01165
; PRIOR FILING DATE: 1997-04-29
; NUMBER OF SEQ ID NOS: 131
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 95
; LENGTH: 306
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: humanized
US-09-171-945-95

Query Match 9.5%; Score 73.5; DB 4; Length 306;
Best Local Similarity 28.1%; Pred. No. 9.9;
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;

QY 1 PSKEPLRPRCPINATLAVERKGC-----PVCITVTTICAGTCPTMTVLQVY-LP 51
Db 145 PSVFPLAECRSSTSGTAA--LGLVKDYPPPTVYMNHGALTSQVHTFPVQLQSSGLY 202

QY 52 ALPOVY-----CNVR-----DVFESIRLP-----GCRGVNPPVSYA 84
Db 203 SLSSVTVVSSSLGTQYTCNVNHRKPSNWKDKRVE-LATPLDGTHTCPCPPEP-----256

QY 85 VALSCOC-ALCRNSTCCGPK--DHPLTCDPRFOQSSSKAPP--PSLPSPSRLPG 137
Db 257 --KSCDTPPCPR-----CPEPKSCDTPPC--PRCPERKSCDTPPCPCPAPELLOG 306

RESULT 160
5242798-5
; Patent No. 5242798
; APPLICANT: SUTCLIFFE, J. GEROR
; TITLE OF INVENTION: SYNTHETIC POLYPEPTIDES CORRESPONDING
; TO POLYMER STRUCTURES DERIVED FROM BRAIN-SPECIFIC MRNAs,
; RECEPTOR METHODS AND DIAGNOSTICS USING THE SAME
; NUMBER OF SEQUENCES: 19
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/476,961
; FILING DATE: 07-FEB-1990
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 58,620
; FILING DATE: 03-JUN-1987
; APPLICATION NUMBER: 516,136
; FILING DATE: 21-JUL-1993
; SEQ ID NO:5

LENGTH: 318
5242798-5
Query Match 9.5%; Score 73.5; DB 6; Length 318;
Best Local Similarity 27.5%; Pred. No. 10;
Matches 36; Conservative 16; Mismatches 52; Indels 27; Gaps 7;

QY 28 ITVNTT-----LCAGYCTMTVTRVQLVDPALPQVTCNVROY-REESIRLP--GCRP-- 75
Db 143 VTVNTEREFTVSERGLTSLTLRGOAQAPRVICTSRNLYGTOSLELPQCAHRLM 202

QY 76 -----GVNPPVSYA--VALSCOCALCRNSTCCGPK-----DHPLTCDPRFOQSSSKA 124
Db 203 WAKIGPVGAVAFALIAVCYITOTRRKKNVTSPSPSAGONPHVLYSPFRIEGA--- 259

QY 125 PPSLPSPSRL 135
Db 260 -PKYSEARL 269

RESULT 161
US-08-665-647-5
; Sequence 5, Application US/08665647
; Patent No. 5935803
; GENERAL INFORMATION:
; APPLICANT: Dasquez, Nickl J.
; APPLICANT: Ron, Dorit
; APPLICANT: Roderick, Anna F.
; APPLICANT: Napolitano, Eugene W.
; TITLE OF INVENTION: METHODS TO IDENTIFY IMMUNOMODULATORS
; TITLE OF INVENTION: USING COGNATE INTERACTION OF PKC-THETA
; NUMBER OF SEQUENCES: 89
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 Pennsylvania Avenue, NW - Ste. 5500
; CITY: Washington
; STATE: DC
; COUNTRY: USA
; ZIP: 20006-0088
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/665,647
; FILING DATE: 18-JUN-1996
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Murashige, Kate H.
; ADDRESS: 1000 NUMBER 27, 959
; REFERENCE/DOC. NUMBER: 22550-20025.25
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (202) 887-1500
; TELEFAX: (202) 822-0168
; TELE: 90-4030 MESNFORNSWH
; INFORMATION FOR SEQ ID NO: 5:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 431 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-665-647-5

Query Match 9.5%; Score 73.5; DB 2; Length 431;
Best Local Similarity 22.4%; Pred. No. 15;
Matches 46; Conservative 18; Mismatches 60; Indels 81; Gaps 11;

QY 5 PLRPRCPINATLAVER-ECPCVTCVTTICAGTCPTMTVRL-----46
Db 117 PSKRATPINLAKIRKSSGSSGVQR-----PFRDYLHLALRPYKAEALLRU 169

QY 47 -----QCVLPALPQV-----CNYRDFRESIR--LPCCPRGVNPPVSYA 86

Db 170 QKGLTQKOTKTLDSJQVSNVNGKGTCTGLQDCKWYSKQKMPGTSGCDOLKRLM 229
QY 87 LSCQALC--RSTTDCGGPKH-----PLTCDDPRF-----QDSLS 121
Db 230 RK----LCPQNAITDPPREHGRSASPSQKARTDFIDPLASKKRISHFTQRAOPTLM 285
QY 122 SKAPPS-----LPSPSRLGPSOT 141
Db 286 GKLGNHETLLPVG--PTPSOT 308

RESULT 162
US-09-171-945-113
; Sequence 112, Application US/09171945
; Patent No. 6277559
; GENERAL INFORMATION:
; APPLICANT: Emery, Stephen
; APPLICANT: Copley, Clive Graham
; TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said
; FILE REFERENCE: Antibody, and Their Therapeutic Use in an Adept System
; CURRENT APPLICATION NUMBER: US/09/171,945
; PRIORITY FILING DATE: 1996-05-04
; PRIOR FILING DATE: 1997-02-14
; PRIOR APPLICATION NUMBER: GB9609405.7
; PRIOR FILING DATE: 1996-05-04
; PRIOR APPLICATION NUMBER: PCT/GB97/01165
; NUMBER OF SEQ ID NOS: 131
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 113
; LENGTH: 613
; BEST LOCAL SIMILARITY: 28.1%; Pred. No. 22;
; Mismatches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: humanized
US-09-171-945-113

Query Match 9.5%; Score 73.5; DB 4; Length 613;
Best Local Similarity 28.1%; Pred. No. 22;
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;
QY 1 PSKEPLRPRCPINATLAVEKGC-----PVCIVNTTICAGYCPMTNRVLQGV-LP 51
Db 145 PSVFLAPCSRSTSGGTA--LGLVKDYFPEPVTVSNHGALTSVHTFPFVLQSSGLY 202
QY 52 ALPOVV-----CNYR-----DVFESIRLP-----GCPRGVNVYSTA 84
Db 203 SLSSVTVFSSSLGTQTVTCNVNHPKSNKVKDRVE-LKTPLGDTHTTCRCPEP----- 256
QY 85 VALSCQC-ALCRSTTDCGGPK--DHPLTCDPRFQDSSSKAPP--PSLPSPSRLPG 137
Db 257 --KSCDTTPPCPR---CPEPKSCDTPPC--PRCPEPKSCDTPPCPCPAPELLGG 306

RESULT 163
US-09-171-945-125
; Sequence 125, Application US/09171945
; Patent No. 6277559
; GENERAL INFORMATION:
; APPLICANT: Emery, Stephen
; APPLICANT: Copley, Clive Graham
; TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said
; FILE REFERENCE: Antibody, and Their Therapeutic Use in an Adept System
; CURRENT APPLICATION NUMBER: US/09/171,945
; PRIORITY FILING DATE: 1996-05-04
; PRIOR FILING DATE: 1997-02-14
; PRIOR APPLICATION NUMBER: GB9609405.7
; NUMBER OF SEQ ID NOS: 131
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 125
; LENGTH: 716
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: humanized
US-09-171-945-125

Query Match 9.5%; Score 73.5; DB 4; Length 716;
Best Local Similarity 28.1%; Pred. No. 26;
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;
QY 1 PSKEPLRPRCPINATLAVEKGC-----PVCIVNTTICAGYCPMTNRVLQGV-LP 51
Db 555 PSVFLAPCSRSTSGGTA--LGLVKDYFPEPVTVSNHGALTSVHTFPFVLQSSGLY 612
QY 52 ALPOVV-----CNYR-----DVFESIRLP-----GCPRGVNVYSTA 84
Db 613 SLSSVTVFSSSLGTQTVTCNVNHPKSNKVKDRVE-LKTPLGDTHTTCRCPEP----- 666
QY 85 VALSCQC-ALCRSTTDCGGPK--DHPLTCDPRFQDSSSKAPP--PSLPSPSRLPG 137
Db 667 --KSCDTTPPCPR---CPEPKSCDTPPC--PRCPEPKSCDTPPCPCPAPELLGG 716

US-09-171-945-125
; PRIOR APPLICATION NUMBER: GB9609405.7
; PRIOR FILING DATE: 1996-05-04
; PRIOR APPLICATION NUMBER: PCT/GB97/01165
; PRIOR FILING DATE: 1997-04-29
; NUMBER OF SEQ ID NOS: 131
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 125
; LENGTH: 716
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: humanized
US-09-171-945-125

Query Match 9.5%; Score 73.5; DB 4; Length 716;
Best Local Similarity 28.1%; Pred. No. 26;
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;
QY 1 PSKEPLRPRCPINATLAVEKGC-----PVCIVNTTICAGYCPMTNRVLQGV-LP 51
Db 555 PSVFLAPCSRSTSGGTA--LGLVKDYFPEPVTVSNHGALTSVHTFPFVLQSSGLY 612
QY 52 ALPOVV-----CNYR-----DVFESIRLP-----GCPRGVNVYSTA 84
Db 613 SLSSVTVFSSSLGTQTVTCNVNHPKSNKVKDRVE-LKTPLGDTHTTCRCPEP----- 666
QY 85 VALSCQC-ALCRSTTDCGGPK--DHPLTCDPRFQDSSSKAPP--PSLPSPSRLPG 137
Db 667 --KSCDTTPPCPR---CPEPKSCDTPPC--PRCPEPKSCDTPPCPCPAPELLGG 716

RESULT 164
US-08-709-924-18
; Sequence 18, Application US/08709924
; Patent No. 5968513
; GENERAL INFORMATION:
; APPLICANT: Bialko, Robert C.
; APPLICANT: Bialko, Joseph
; APPLICANT: Lunardi-Ikandar, Yanto
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/709,924
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 514
; ATTORNEY/AGENT INFORMATION:
; FIRM: PENNIE & EDMONDS
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-018
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 869-9741/8864
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 18:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: Peptide
US-08-709-924-18

```

Query Match          9.4%; Score 73; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34; 0; Indels 0;
Matches 14; Conservative 0; Mismatches 0; Gaps 0;

QY 46 LQGVLPALPOVWVN 59
DB 1 LQGVLPALPOVWVN 14

RESULT 165
US-08-709-925-18
; Sequence 18, Application US/08709925
; Patent No. 573748
; GENERAL INFORMATION:
; APPLICANT: Bryant, Joseph C.
; APPLICANT: Luatdi-Iskandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,925
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 52
; ATTORNEY/AGENT INFORMATION:
; NAME: Mistock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-017
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 18:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-925-18

Query Match          9.4%; Score 73; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 46 LQGVLPALPOVWVN 59
DB 1 LQGVLPALPOVWVN 14

RESULT 166
US-08-709-948-18
; Sequence 18, Application US/08709948
; Patent No. 6319504
; GENERAL INFORMATION:
; APPLICANT: Bryant, Joseph C.
; APPLICANT: Luatdi-Iskandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26

```

```

; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 52
; ATTORNEY/AGENT INFORMATION:
; NAME: Mistock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-016
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 18:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-948-18

Query Match          9.4%; Score 73; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 46 LQGVLPALPOVWVN 59
DB 1 LQGVLPALPOVWVN 14

RESULT 167
US-08-469-667-4
; Sequence 4, Application US/08469667
; Patent No. 573748
; GENERAL INFORMATION:
; APPLICANT: Yu, Guo-Liang
; APPLICANT: Rosen, Craig
; TITLE OF INVENTION: Colon Specific Genes and Proteins
; NUMBER OF SEQUENCES: 24
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,
; STREET: 6 Becker Farm Road
; CITY: Roseland
; STATE: NJ
; COUNTRY: USA
; ZIP: 07068-1739
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/469,667
; FILING DATE: 06-JUN-1995
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Ferraro, Gregory D.
; REGISTRATION NUMBER: 36,134
; REFERENCE/DOCKET NUMBER: 325800-435
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 201-994-1700

```

TELEFAX: 201-994-1744
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 235 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-469-667-4

Query Match 9.3%; Score 72; DB 1; Length 235;
Best Local Similarity 25.5%; Pred. No. 10;
Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCPM-----TRVLQGLPALP 54
DB 123 PNETRVP-CSTVPTTEVSAGCTKTVLMNH--CSGSGCTFVMSAKAQLDHSCK 179
QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104
DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVGLP 218

RESULT 168

US-09-224-110-4
Sequence 4, Application US/09224110

Patent No. 6337195
GENERAL INFORMATION:
APPLICANT: Yu, Guo-Liang
TITLE OF INVENTION: Colon Specific Genes and Proteins
NUMBER OF SEQUENCES: 24
CORRESPONDENCE ADDRESSES:
ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,
ADDRESSEE: Stewart & Olstein
STREET: 6 Becker Farm Road
CITY: Roseland
STATE: NJ
COUNTRY: USA

ZIP: 07068-1739

COMPUTER READABLE FORM:

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/09/224,110

FILING DATE:

CLASSIFICATION:

PRIOR APPLICATION DATA: 08/469,667

FILING DATE: 06 JUN 1995

ATTORNEY/AGENT INFORMATION:

NAME: Ferraro, Gregory D.

REGISTRATION NUMBER: 36,134

REFERENCE/DOCKET NUMBER: 325800-435

TELECOMMUNICATION INFORMATION:

TELEPHONE: 201-994-1700

TELEFAX: 201-994-1744

INFORMATION FOR SEQ ID NO: 4:

SEQUENCE CHARACTERISTICS:

LENGTH: 235 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: protein

US-09-224-110-4

Query Match 9.3%; Score 72; DB 4; Length 235;
Best Local Similarity 25.5%; Pred. No. 10;
Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCPM-----TRVLQGLPALP 54
DB 123 PNETRVP-CSTVPTTEVSAGCTKTVLMNH--CSGSGCTFVMSAKAQLDHSCK 179

QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104
DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVGLP 218

RESULT 169

PCT-US95-07289-4

Sequence 4, Application PC/TUS9507289

GENERAL INFORMATION:

APPLICANT: Yu, Guo-Liang

TITLE OF INVENTION: Colon Specific Genes and Proteins

NUMBER OF SEQUENCES: 24

CORRESPONDENCE ADDRESS:

ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,

ADDRESSEE: Stewart & Olstein

STREET: 6 Becker Farm Road

CITY: Roseland

STATE: NJ

COUNTRY: USA

ZIP: 07068-1739

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: PCT/US95/07289

FILING DATE: 06 JUN 1995

CLASSIFICATION:

ATTORNEY/AGENT INFORMATION:

NAME: Ferraro, Gregory D.

REGISTRATION NUMBER: 36,134

REFERENCE/DOCKET NUMBER: 325800-265

TELECOMMUNICATION INFORMATION:

TELEPHONE: 201-994-1700

TELEFAX: 201-994-1744

INFORMATION FOR SEQ ID NO: 4:

SEQUENCE CHARACTERISTICS:

LENGTH: 235 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: protein

PCT-US95-07289-4

Query Match 9.3%; Score 72; DB 5; Length 235;

Best Local Similarity 25.5%; Pred. No. 10;

Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCPM-----TRVLQGLPALP 54

DB 123 PNETRVP-CSTVPTTEVSAGCTKTVLMNH--CSGSGCTFVMSAKAQLDHSCK 179

QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104

DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVGLP 218

RESULT 170

PCT-US96-12374-2

Sequence 2, Application PC/TUS9612374

GENERAL INFORMATION:

APPLICANT: Northwestern University

TITLE OF INVENTION: Herpes Virus Entry Mediator

NUMBER OF SEQUENCES:

CORRESPONDENCE ADDRESS:

ADDRESSEE: Dressler, Goldsmith, Milnamow & Katz, Ltd.

STREET: 180 N. Stetson, Suite 4700

CITY: Chicago

STATE: Illinois

COUNTRY: U.S.A.

ZIP: 60601

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
FILING DATE: PCT/US96/12374
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Northrup, Thomas E.
REGISTRATION NUMBER: 33,268
REFERENCE/DOCKET NUMBER: NOR3446P020PC
TELECOMMUNICATION INFORMATION:
TELEPHONE: (312) 616-5400
TELEFAX: (312) 616-5460
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 283 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
PCT-US96-12374-2

Query Match 9.3%; Score 72; DB 5; Length 283;
Best Local Similarity 24.5%; Pred. No. 13;
Matches 38; Conservative 13; Mismatches 68; Indels 36; Gaps 9;

QY 1 PSKEPLRPRCPINATLAVEKGP-----VCITVNTICAGYCPTRV--LOG 48
DB 33 PCYAPALPSCK--EDEVPGSECCPGKSGVRYVKEAGELGTGTCPE-CPGTYIAHLNG 89
QY 49 VLPALPOVVCN----YRDVRFESIRLPGCPRGVNVSVYVALSC-----OCALCRST 98
DB 90 LSKCIAQOMCDPANGLRATR-----NCSRTENAVCGSPGHCITVQGDHCAACRYA 142
QY 99 TDCGPFDRPLCTDDPRQDSSSKAPPSLPSPS 133
DB 143 TSSPGQR--VKGGTESDITLQNCPCPTF-SPN 173

RESULT 171
US-07-937-609-16
Sequence 16, Application US/07937609
Patent No. 5319073
GENERAL INFORMATION:
APPLICANT: WANK, Stephen A.
TITLE OF INVENTION: CLONING AND FUNCTIONAL EXPRESSION OF
NUMBER OF SEQUENCES: 29
CORRESPONDENCE ADDRESS:
ADDRESSEE: Foley & Lardner
STREET: 1800 Diagonal Road, Suite 500
CITY: Alexandria
STATE: VA
COUNTRY: USA
ZIP: 22313-0299
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/937,609
FILING DATE: 19920902
CLASSIFICATION: 436
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/831,248
FILING DATE: 07-FEB-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/861,769
FILING DATE: 01-APR-1992

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/928,033
FILING DATE: 11-AUG-1992
ATTORNEY/AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29,768
REFERENCE/DOCKET NUMBER: 40399/166 NIHD
TELECOMMUNICATION INFORMATION:
TELEPHONE: (703) 836-9300
TELEFAX: (703) 883-4109
TELEX: 899149
INFORMATION FOR SEQ ID NO: 16:
SEQUENCE CHARACTERISTICS:
LENGTH: 452 amino acids
TYPE: AMINO ACID
TOPOLOGY: linear
MOLECULE TYPE: protein
US-07-937-609-16

Query Match 9.3%; Score 72; DB 1; Length 452;
Best Local Similarity 22.1%; Pred. No. 21;
Matches 40; Conservative 15; Mismatches 48; Indels 78; Gaps 8;

QY 10 CRPINATLAVEKCPVCI-----TWNTICAGYCPTRVLOGVLPALPOVVCNTRD 62
DB 284 CRVTSVAGEDSDCCVQLPSRSLRLEMTLTITTPGPVP-----GPRNQAKLLAKRV 336
QY 63 VR-----FESIRLPGCPRG-----VNPVY-- 81
DB 337 VRMLLVTVLLFELWLPYVNTVTRAPDGGAGNALSCNPSIFHLLSYVSNVLYC 396
QY 82 ----SYAVALSCALCRSTTDCGP---KDHLCTDDPRQDSSSKAPPSLPSPSR 134
DB 397 FHRFRQACLDTCARC-----CPRPRARPOLPDEDP-----PTPSIASLSR 440
QY 135 L 135
DB 441 L 441

RESULT 172
US-08-029-170-16
Sequence 16, Application US/08029170
Patent No. 6169173
GENERAL INFORMATION:
APPLICANT: WANK, Stephen A.
TITLE OF INVENTION: CLONING AND FUNCTIONAL EXPRESSION OF
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: Foley & Lardner
STREET: 1800 Diagonal Road, Suite 500
CITY: Alexandria
STATE: VA
COUNTRY: USA
ZIP: 22313-0299
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/029,170
FILING DATE: 19930310
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/937,609
FILING DATE: 02-SEP-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/928,033
FILING DATE: 11-AUG-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/861,769
FILING DATE: 01-APR-1992

; FILING DATE: 01-APR-1992
 ; PRIORITY INFORMATION DATA:
 ; APPLICATION NUMBER: US 07/831,248
 ; FILING DATE: 07-FEB-1992
 ; ATTORNEY/AGENT INFORMATION:
 ; NAME: BENT, Stephen A.
 ; REGISTRATION NUMBER: 29,768
 ; REFERENCE/DOCKET NUMBER: 40399/166 NIHD
 ; TELECOMMUNICATION INFORMATION:
 ; TELEPHONE: (703)836-9300
 ; TELEFAX: (703)683-4109
 ; TELEX: 899149
 ; INFORMATION FOR SEQ ID NO: 16:
 ; SEQUENCE CHARACTERISTICS:
 ; LENGTH: 855 amino acids
 ; TYPE: AMINO ACIDS
 ; TOPOLOGY: linear
 ; MOLECULE TYPE: protein
 ; US-08-029-170-16

Query Match 9.38; Score 72; DB 4; Length 452;

Best Local Similarity 22.18; Pred. No. 21;

Matches 40; Conservative 15; Mismatches 48; Indels 78; Gaps 8;

QY 10 CRPNATLAVKSGCPVGI-----TWNTICAGTCPTWIRVLOGVLPALPQVYCNVSD 62

Db 284 CRPVTSVAGSDGCVLPKRSLEMTLTITTPGPVP-----GRPNQAKLAKKRV 336

QY 63 VR-----FESIRLPQCPRG-----VNPVV-- 81

Db 337 VMLLVIVLFFLCMLPVYVYNTWRAFDGFGAQLSGAPISFIHLISYVACVNPVLYC 396

QY 82 -----STAVALSQCACLRSTTDCGP---KDHLPTCDPFDQSSSKKAPPSLPSPR 134

Db 397 FWHRRFQACLTCAK-----CPRPRARQPLPDEP-----PTPSIASLR 440

QY 135 L 135

Db 441 L 441

RESULT 173

US-09-813-819-2

; Sequence 2, Application US/09813819

; Patent No. 6294368

; GENERAL INFORMATION:

; APPLICANT: MERKULOV, Gennady et al

; TITLE OF INVENTION: ISOLATED HUMAN PROTEASE PROTEINS,

; TITLE OF INVENTION: NUCLEIC ACID MOLECULES ENCODING HUMAN PROTEASE PROTEINS, AND

; FILE REFERENCE: CLO01177

; CURRENT APPLICATION NUMBER: US/09/813,819

; NUMBER OF SEQ ID NOS: 4

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 2

; LENGTH: 855

; TYPE: PRT

; ORGANISM: Human

US-09-813-819-2

Query Match

Best Local Similarity 9.38; Score 72; DB 4; Length 855;

Matches 27; Conservative 3; Mismatches 36; Indels 30; Gaps 4;

QY 58 CNYRQVFESIRLPGCPGVNPVYVAVALSQCACLRSTTDCG---GPKDHLPTCD- 112

Db 750 COYRAAGSGPSERPGPP-----ORALLARCTKASALSFAPPSRLPPDP 794

QY 113 -DPRFQSSSKKAPPSLPSPS-----RLPGP 138

Db 795 VSKRLQSGQPAKPPPPKPLPADPQGRCPGDLPGP 830

RESULT 174

US-09-920-048-2

; Sequence 2, Application US/09920048

; Patent No. 6313732

; GENERAL INFORMATION:

; APPLICANT: MERKULOV, Gennady et al

; TITLE OF INVENTION: ISOLATED HUMAN PROTEASE PROTEINS,

; TITLE OF INVENTION: NUCLEIC ACID MOLECULES ENCODING HUMAN PROTEASE PROTEINS, AND

; FILE REFERENCE: CLO01177DIV

; CURRENT APPLICATION NUMBER: US/09/920,048

; PRIOR FILING DATE: 2001-08-02

; PRIOR APPLICATION NUMBER: 09/813,819

; NUMBER OF SEQ ID NOS: 4

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 2

; LENGTH: 855

; TYPE: PRT

; ORGANISM: Human

US-09-920-048-2

Query Match 9.38; Score 72; DB 4; Length 855;

Best Local Similarity 28.18; Pred. No. 44;

Matches 27; Conservative 3; Mismatches 36; Indels 30; Gaps 4;

QY 58 CNYRQVFESIRLPGCPGVNPVYVAVALSQCACLRSTTDCG---GPKDHLPTCD- 112

Db 750 COYRAAGSGPSERPGPP-----ORALLARCTKASALSFAPPSRLPPDP 794

QY 113 -DPRFQSSSKKAPPSLPSPS-----RLPGP 138

Db 795 VSKRLQSGQPAKPPPPKPLPADPQGRCPGDLPGP 830

RESULT 175

US-09-327-362-3

; Sequence 3, Application US/08327362

; Patent No. 5811249

; GENERAL INFORMATION:

; APPLICANT: William D. Odell, Jeanine T. Griffin, Sanjeev

; APPLICANT: Grover, Omar Caticha, Douglas T. Carrell,

; APPLICANT: Marion L. Woods

; TITLE OF INVENTION: Control of Infectious Microorganisms

; TITLE OF INVENTION: By Modulation of Chloronic

; TITLE OF INVENTION: Gonadotropin-Related Protein

; TITLE OF INVENTION: Activity

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Thorde, No. 5811249th & Western

; STREET: 9035 South 700 East, Suite 200

; CITY: Sandy

; STATE: Utah

; COUNTRY: USA

; ZIP: 84070

; COMPUTER READABLE FORM:

; MEDIUM TYPE: Diskette, 3.5 inch, 720 Kb storage

; OPERATING SYSTEM: DOS 6.1

; CURRENT FILE NAME: Word Perfect 5.1

; APPLICATION NUMBER: US/08/327,362

; FILING DATE:

; CLASSIFICATION: 435

; PRIOR APPLICATION DATA:

; APPLICATION NUMBER:

; FILING DATE:

; ATTORNEY/AGENT INFORMATION:

; NAME: Alan J. Howarth

; REGISTRATION NUMBER: 36,553

; REFERENCE/DOCKET NUMBER: T1893

; TELECOMMUNICATION INFORMATION:

TELEPHONE: (801)566-6633
 TELEFAX: (801)566-0750
 INFORMATION FOR SEQ ID NO: 3:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 78 amino acids
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 ORIGINAL SOURCE: Xanthomonas maltophilia
 STRAIN: ATCC 13637
 US-08-327-362-3

Query Match 9.2% Score 71.5; DB 2; Length 78;
 Best Local Similarity 44.2%; Pred. No. 3.3;
 Matches 19; Conservative 3; Mismatches 20; Indels 1; Gaps 1;

OY 60 YEDVRF-ESIRLPGCPVNPVVSVAVALSCQALCRSTTDC 101
 DB 6 YKDIRGESIRSMCRVCVPVPSPTAPAGLAASFNRTERC 48

RESULT 176

US-09-158-565-3
 Sequence 3, Application US/09158565

Patent No. 6139839

GENERAL INFORMATION:

APPLICANT: Griffin, William D.

APPLICANT: Griffin, Jeanline T.

APPLICANT: Grover, Soileev

APPLICANT: Caticha, Omar

APPLICANT: Carrell, Douglas T.

APPLICANT: Woods, II, Marion L.

TITLE OF INVENTION: Control of Infectious Microorganisms by Modulation of

TITLE OF INVENTION: Chorionic Gonadotropin-Related Protein Activity

FILE REFERENCE: T1893.DIV

CURRENT FILING DATE: 1998-09-09

EARLIER APPLICATION NUMBER: US 08/327,362

NUMBER OF SEQ ID NOS: 5

SOFTWARE: WordPerfect 8.0

SEQ ID NO 3

LENGTH: 78

TYPE: PRT

ORGANISM: Xanthomonas maltophilia

US-09-158-565-3

Query Match 9.2% Score 71.5; DB 4; Length 78;
 Best Local Similarity 44.2%; Pred. No. 3.3;
 Matches 19; Conservative 3; Mismatches 20; Indels 1; Gaps 1;

OY 60 YEDVRF-ESIRLPGCPVNPVVSVAVALSCQALCRSTTDC 101
 DB 6 YKDIRGESIRSMCRVCVPVPSPTAPAGLAASFNRTERC 48

RESULT 177

US-08-570-157-2
 Sequence 2, Application US/08570157

Patent No. 571035

GENERAL INFORMATION:

APPLICANT: Koplin, Alan S.

APPLICANT: Beinborn, Martin

TITLE OF INVENTION: ASSAY FOR NON-PEPTIDE AGONISTS TO

TITLE OF INVENTION: PEPTIDE HORMONE RECEPTORS

NUMBER OF SEQUENCES: 23

CORRESPONDENCE ADDRESS:

ADDRESSEE: Fish & Richardson P.C.

STREET: 225 Franklin Street

CITY: Boston

STATE: MA

COUNTRY: USA

ZIP: 02110-2804
 COMPUTER READABLE FORM:
 MEDIUM TYPE: Floppy disk
 COMPUTER: IBM PC compatible
 OPERATING SYSTEM: PC-DOS/MS-DOS
 SOFTWARE: PatentIn Release #1.0, Version #1.30
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: US/08/570,157
 FILING DATE: 11-SEP-1995
 CLASSIFICATION: 435
 ATTORNEY/AGENT INFORMATION:
 NAME: Clark, Paul T.
 REGISTRATION NUMBER: 30,162
 REFERENCE/DOCKET NUMBER: 00398/109001
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: 617/542-5070
 TELEFAX: 617/542-8906
 TELEX: 200134
 INFORMATION FOR SEQ ID NO: 2:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 451 amino acids
 TYPE: amino acid
 STRANDEDNESS: not relevant
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 US-08-570-157-2

Query Match 9.2% Score 71.5; DB 1; Length 451;
 Best Local Similarity 21.7%; Pred. No. 24;
 Matches 39; Conservative 18; Mismatches 46; Indels 77; Gaps 9;

OY 10 CRPIATLAVREKSCPCVTV-----NTTICAGYCPMTVRVLOQLPALPOLVYCNVDF 63
 DB 284 CRPVTSVAGEDSDSC--CVOLPRLSRLMTL-----TPTGVPVGPGRNQAKLAKRVV 336

RESULT 178

US-08-709-924-12
 Sequence 12, Application US/08709924

Patent No. 5968513

GENERAL INFORMATION:

APPLICANT: Ballo, Robert C.

APPLICANT: Ballo, Joseph

APPLICANT: Lunardi-Istardat, Yanto

TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS

TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN

NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS:

ADDRESSEE: Pennie & Edmonds

STREET: 1155 Avenue of the Americas

CITY: New York

STATE: NY

COUNTRY: USA

ZIP: 10036-2711

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/709,924

FILING DATE: 09-SEP-1996

CLASSIFICATION: 514

ATTORNEY/AGENT INFORMATION:

NAME: Mirock, S. Leslie

REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-924-12

Query Match 9.1%; Score 71; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

RESULT 179
US-08-709-925-12
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-925-12

Query Match 9.1%; Score 71; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-925-12

Query Match 9.1%; Score 71; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-925-12

Query Match 9.1%; Score 71; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

RESULT 180
US-08-709-948-12
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-948-12

Query Match 9.1%; Score 71; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

RESULT 181
US-08-312-870-7
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 12:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-312-870-7

Query Match 9.1%; Score 71; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.53;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 45 VLQGVLPALPQVC 58
DB 1 VLQGVLPALPQVC 14

```

;
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/312.870
; FILING DATE: 01-SEP-1995
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Hansen, Eugene S.
; REGISTRATION NUMBER: 31,966
; REFERENCE/DOCKET NUMBER: OMRP B35150
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 214-939-4500
; TELEFAX: 214-939-4500
; INFORMATION FOR SEQ ID NO: 7:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 275 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: Protein
; US-08-312-870-7

Query Match          9.1%; Score 71; DB 1; Length 275;
Best Local Similarity 20.3%; Pred. No. 15;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;

QY 4 EPLAP-----RCRPINATLAVEKGGPCVITVTTTICA-GYCTMTNRYLQGLPALP 54
Db 124 EPLVPCFRANCEYQCPINLTSYL-----CYCAGFA-----IHPEP 161

QY 55 ---QVCNRYRVRESIRLPGCGPVNPNVSVAVALSQC-----91
Db 162 HRCQMFQ-----TACPADCDP-----NTQSCCEPBGVILDGFCITDIDECEN 207

QY 92 -----ALCRR-STTDGGPKDHLT-----CDPRQDSSSSKAPPSLPSP-SRLPG 137
Db 208 GGFCSGVCHNLPGTEFCIGPDSALARRHIGTDCSGKVGSGSGEPSPPGSLTLP 267

QY 138 PS 139
Db 268 PA 269

RESULT 182
US-08-454-295-3
; Sequence 3, Application US/08454295
; Patent No. 6031087
; GENERAL INFORMATION:
; APPLICANT: Anderson, Marilyn A.
; APPLICANT: Atkinson, Angela H.
; APPLICANT: Beach, Robert L.
; APPLICANT: Chitt, Adrienne E.
; TITLE OF INVENTION: PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC
; CORRESPONDENCE ADDRESS: 14
; ADDRESSEE: Scully, Scott, Murphy & Presser
; STREET: 400 Garden City Plaza
; CITY: Garden City
; STATE: New York
; COUNTRY: United States of America
; ZIP: 11530
; COMPUTER READABLE FORM:
; DISC TYPE: floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/454,295
; FILING DATE: 01-SEP-1995
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Digiglio, Frank S.
; REGISTRATION NUMBER: 31,346

```

```

;
; REFERENCE/DOCKET NUMBER: 9748
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (516) 742-4343
; TELEFAX: (516) 742-4366
; TELEEX: 230 901 SANS UR 3:
; INFORMATION FOR SEQ ID NO:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 368 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-454-295-3

Query Match          9.1%; Score 71; DB 3; Length 368;
Best Local Similarity 22.0%; Pred. No. 21;
Matches 33; Conservative 13; Mismatches 52; Indels 52; Gaps 8;

QY 4 EPLRPRCPINATLAVEKGGP-----VCITVTTTICAG-----YCPMTNRYLQ 48
Db 54 DPNRPACTLNCDPRIATGVCPRSEKKNDRICT---TMCACATGCKYFSDGTFVCEG 109

QY 49 VL-PALPOVVCNRYRVRESIRLPGCGPVNPNVSVAVALSQCCLCRSTTD-----C 101
Db 110 ESDPRNPK-----ACPRNCDPRIATGI-----CPLAEKKNDRICTNCC 148

QY 102 GGPKHDLTCDPRF-----QDSSSSKAPP 126
Db 149 AGKGGCKYFSDGTFVCEGSDPKNPKACP 178

RESULT 183
US-09-431-500A-3
; Sequence 3, Application US/09431500A
; Patent No. 6261821
; GENERAL INFORMATION:
; APPLICANT: Anderson, Marilyn A.
; APPLICANT: Atkinson, Angela H.
; APPLICANT: Beach, Robert L.
; APPLICANT: Chitt, Adrienne E.
; TITLE OF INVENTION: PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC
; FILE REFERENCE: 9748B
; CURRENT APPLICATION NUMBER: US/09/431,500A
; CURRENT FILING DATE: 1999-11-01
; PRIOR APPLICATION NUMBER: 08/454,295
; PRIOR FILING DATE: 1995-09-01
; NUMBER OF SEQ ID NOS: 16
; SOFTWARE: Patent in Ver. 2.1
; SEQ ID NO 368
; DISC TYPE: floppy disk
; ORGANISM: Nicotiana glauca
; US-09-431-500A-3

Query Match          9.1%; Score 71; DB 4; Length 368;
Best Local Similarity 22.0%; Pred. No. 21;
Matches 33; Conservative 13; Mismatches 52; Indels 52; Gaps 8;

QY 4 EPLRPRCPINATLAVEKGGP-----VCITVTTTICAG-----YCPMTNRYLQ 48
Db 54 DPNRPACTLNCDPRIATGVCPRSEKKNDRICT---TMCACATGCKYFSDGTFVCEG 109

QY 49 VL-PALPOVVCNRYRVRESIRLPGCGPVNPNVSVAVALSQCCLCRSTTD-----C 101
Db 110 ESDPRNPK-----ACPRNCDPRIATGI-----CPLAEKKNDRICTNCC 148

QY 102 GGPKHDLTCDPRF-----QDSSSSKAPP 126
Db 149 AGKGGCKYFSDGTFVCEGSDPKNPKACP 178

RESULT 184
US-08-312-870-3

```


DB 399 HRCQMFNCQ-----TACPADCP-----NTQASCECPGYILDDGFICTDIDECEN 444
QY 92 -----ALCRR--STTCGGPKDPLT-----CDPRFQDSSSKAPPSLPSP-SRLPG 137
DB 445 GGFCSGVCHLPGTTECICGDSALAHGHTGDCSGKVGDSGSGEPPSPTPGSLTP 504
QY 138 PS 139
DB 505 PA 506

RESULT 187
US-08-261-206A-59
; Sequence 59, Application US/08261206A
; Patent No. 5574007
; GENERAL INFORMATION:
; APPLICANT: Kushl, Mitichitaka
; APPLICANT: Goshima, Komaki
; APPLICANT: Yamamoto, Shuji
; APPLICANT: Suzuki, Koji
; APPLICANT: Matsuda, Akio
; TITLE OF INVENTION: A Polypeptide Capable of Interacting
; TITLE OF INVENTION: with Thrombin
; NUMBER OF SEQUENCES: 80
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Birch, Stewart, Kolasch & Birch
; STREET: 101 N. Washington St.
; CITY: Falls Church
; STATE: Virginia
; COUNTRY: USA
; ZIP: 22046-0747
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/261.206A
; FILING DATE: 03-AUG-1991
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/740,492
; FILING DATE: 03-AUG-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: Svensson, Leonard R.
; REGISTRATION NUMBER: 30330
; REFERENCE/DOCKET NUMBER: 216-275P
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-241-1300
; TELEFAX: 703-241-2848
; TELETYPE: 248345
; INFORMATION FOR SEQ ID NO: 59:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 575 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: internal
; ORIGINAL SOURCE:
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: Protein
; LOCATION: 1..575
; OTHER INFORMATION: /label= protein
; OTHER INFORMATION: /note= "human thrombomodulin"
US-08-261-206A-59

Query Match 9.1%; Score 71; DB 1; Length 575;
Best Local Similarity 20.3%; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;
QY 4 EPLRP-----RCRPTNATLAVEKGGCPVCIIVNTTICA-GYCPMTTRVLQGVLPALP 54
DB 445 GGFCSGVCHLPGTTECICGDSALAHGHTGDCSGKVGDSGSGEPPSPTPGSLTP 504

DB 364 EPVDFCFRANCEYQCOPLNOTSYL-----CVCAGEFAP-----IPHEP 401
QY 55 ---QVVCNYRVRFESIRLPGCRGVNPNVYVAVALSCQC----- 91
DB 402 HRCQMFNCQ-----TACPADCP-----NTQASCECPGYILDDGFICTDIDECEN 447
QY 92 -----ALCRR--STTCGGPKDPLT-----CDPRFQDSSSKAPPSLPSP-SRLPG 137
DB 448 GGFCSGVCHLPGTTECICGDSALAHGHTGDCSGKVGDSGSGEPPSPTPGSLTP 507
QY 138 PS 139
DB 508 PA 509

RESULT 188
US-08-312-870-1
; Sequence 1, Application US/08312870
; Patent No. 6396235
; GENERAL INFORMATION:
; APPLICANT: Esmon, Charles T.
; APPLICANT: Esmon, Charles T.
; TITLE OF INVENTION: Method for Detecting Antibodies to
; TITLE OF INVENTION: Thrombomodulin in Patients
; NUMBER OF SEQUENCES: 11
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richards, Medlock & Andrews
; STREET: 1201 Elm Street, Suite 4500
; CITY: Dallas
; STATE: Texas
; COUNTRY: US
; ZIP: 75270-2197
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/312.870
; FILING DATE: 03-AUG-1991
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Hansen, Eugenia S.
; REGISTRATION NUMBER: 31,966
; REFERENCE/DOCKET NUMBER: OMF 835150
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 214-939-4500
; TELEFAX: 214-939-4600
; INFORMATION FOR SEQ ID NO: 1:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 575 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: N-terminal
; ORIGINAL SOURCE:
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: Protein
; LOCATION: 19..575
US-08-312-870-1

Query Match 9.1%; Score 71; DB 1; Length 575;
Best Local Similarity 20.3%; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;
QY 4 EPLRP-----RCRPTNATLAVEKGGCPVCIIVNTTICA-GYCPMTTRVLQGVLPALP 54
DB 364 EPVDFCFRANCEYQCOPLNOTSYL-----CVCAGEFAP-----IPHEP 401
QY 55 ---QVVCNYRVRFESIRLPGCRGVNPNVYVAVALSCQC----- 91
DB 402 HRCQMFNCQ-----TACPADCP-----NTQASCECPGYILDDGFICTDIDECEN 447

OY 92 -----ALCR--STTDGGRKHPLT-----CDPRFDDSSSKAPPSLPSP-SRLPG 137
DB 448 GFCGSGVCHNLPTFCICGPDGSDALAHRIHTDCDCKGVDGSGSGEPPSPPTGSLTP 507
OY 138 PS 139
DB 508 PA 509
RESULT 189
US-08-170-290A-54
; Sequence 54, Application US/08170290A
; Patent No. 5702931
; GENERAL INFORMATION:
; APPLICANT: MORSE, WILLIAM H.
; APPLICANT: MORSE, MICHAEL J.
; APPLICANT: ZIEGLER, LAURA R.
; TITLE OF INVENTION: No. 5702931el Mutagenesis Methods and
; NUMBER OF SEQUENCES: 63
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: JAMES M. HESLIN
; STREET: 379 LYTON AVE.
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94301
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/170.290A
; FILING DATE: 01-JUL-1992
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/US92/05573
; FILING DATE: 01-JUL-1992
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/724,237
; FILING DATE: 01-JUL-1991
; NAME/AGENT INFORMATION:
; NAME: MORSE, WILLIAM H.
; REGISTRATION NUMBER: 29,541
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 415-326-2400
; TELEFAX: 415-326-2422
; INFORMATION FOR SEQ ID NO: 54:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 575 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-170-290A-54
Query Match 9.11; Score 71; DB 1; Length 575;
Best Local Similarity 20.31; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;
OY 4 EPLRP-----RCRPNATLAVKESGCPVITNTTICA-GYCTPTTRVLQGVLPALP 54
DB 364 EPVDPFRANCEYOCQPLNOTSYL-----CVCAGSGAP-----IPHEP 401
OY 55 ---QVCNTRVDVRESIRLPGCPGVNPNVSYVALSCQ----- 91
DB 402 HRCQMFNQ-----TACPADCDP-----NTQASCECPGTYLDGFICTDIDECEN 447
OY 92 -----ALCR--STTDGGRKHPLT-----CDPRFDDSSSKAPPSLPSP-SRLPG 137
DB 448 GFCGSGVCHNLPTFCICGPDGSDALAHRIHTDCDCKGVDGSGSGEPPSPPTGSLTP 507
OY 138 PS 139
DB 508 PA 509
RESULT 191
US-08-485-449-6
; Sequence 6, Application US/08485449
; Patent No. 5824789
; GENERAL INFORMATION:
; APPLICANT: VANDENBERG, DAVID
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS, NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS, NUCLEOTIDE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FORSTER
; STREET: 755 PAGE MILL ROAD
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible

DB 448 GFCGSGVCHNLPTFCICGPDGSDALAHRIHTDCDCKGVDGSGSGEPPSPPTGSLTP 507
OY 138 PS 139
DB 508 PA 509
RESULT 190
5466668-6
; Patent No. 5466668
; APPLICANT: GLASER, CHARLES B.; MORSE, MICHAEL J.; LIGHT,
; DAVID R.
; TITLE OF INVENTION: SUPERIOR THROMBOMODULIN ANALOGS FOR
; PHARMACEUTICAL USE
; NUMBER OF SEQUENCES: 57
; CORRESPONDENCE ADDRESS:
; APPLICATION NUMBER: US/08/155,346
; FILING DATE: 22-NOV-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 568,456
; FILING DATE: 15-AUG-1990
; APPLICATION NUMBER: 506,325
; FILING DATE: 09-APR-1990
; APPLICATION NUMBER: 406,941
; FILING DATE: 13-SEP-1989
; APPLICATION NUMBER: 348,374
; FILING DATE: 28-APR-1989
; SEQ ID NO: 6
; LENGTH: 575
5466668-6
Query Match 9.11; Score 71; DB 6; Length 575;
Best Local Similarity 20.31; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;
OY 4 EPLRP-----RCRPNATLAVKESGCPVITNTTICA-GYCTPTTRVLQGVLPALP 54
DB 364 EPVDPFRANCEYOCQPLNOTSYL-----CVCAGSGAP-----IPHEP 401
OY 55 ---QVCNTRVDVRESIRLPGCPGVNPNVSYVALSCQ----- 91
DB 402 HRCQMFNQ-----TACPADCDP-----NTQASCECPGTYLDGFICTDIDECEN 447
OY 92 -----ALCR--STTDGGRKHPLT-----CDPRFDDSSSKAPPSLPSP-SRLPG 137
DB 448 GFCGSGVCHNLPTFCICGPDGSDALAHRIHTDCDCKGVDGSGSGEPPSPPTGSLTP 507
OY 138 PS 139
DB 508 PA 509
RESULT 191
US-08-485-449-6
; Sequence 6, Application US/08485449
; Patent No. 5824789
; GENERAL INFORMATION:
; APPLICANT: VANDENBERG, DAVID
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS, NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS, NUCLEOTIDE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FORSTER
; STREET: 755 PAGE MILL ROAD
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS
CURRENT APPLICATION DATA: Patent in Release #1.0, Version #1.30
PATENT APPLICATION NUMBER: US/08/485,449
FILING DATE: 09/08/1996
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: KOSKI, ANTOINETTE F.
REGISTRATION NUMBER: 34,202
REFERENCE/DOCKET NUMBER: 20296-20035.00
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 813-5600
TELEFAX: (415) 494-0792
INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 389 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-485-449-6

Query Match 9.14; Score 70.5; DB 2; Length 389;

Best Local Similarity 26.04; Pred. No. 25;
Matches 50; Conservative 18; Mismatches 63; Indels 61; Gaps 11;

Oy 8 PRCP-----INATLAVEKGP-----VCITVN--TTICAGVC-- 39
Db 5 PRSRPPPLAGLLFLALFSLALSNEILGLKLPGEPTANTVCLTSLGSLKRLGLCLR 64
Oy 40 -PTMT-RVLQVLPALPQVNCVNRDVRFSIRLPQ-----CPRGVNPV----- 80
Db 65 SPDVTSALQGLHTAVHCEQHLRDWRNCSALEGGGRPLPHHSAILKRGRESAFSML 124
Oy 81 ---VSTAVALSQCACLRSTTDG---GPKDHLPTCDPFRQDSSSKAPPSPSP- 132
Db 125 AAGVHAYAT--CSLKNVSCCGMGKSGBDP-LRNLQLQALSRLKRPISQSPV 161
Oy 133 ---SRLPGSDT 141
Db 182 PGVSPSPQDT 193

RESULT 192
US-08-665-259-21
Sequence 21; Application US/08665259
Patent No. 8028173
GENERAL INFORMATION:
APPLICANT: Landes, Gregory M.
APPLICANT: Burn, Timothy C.
APPLICANT: Connors, Timothy D.
APPLICANT: Dackowski, William R.
APPLICANT: Van Raay, Terence J.
APPLICANT: Klinger, Katherine W.
TITLE OF INVENTION: NOVEL HUMAN CHROMOSOME 16 GENES,
METHODS OF MAKING AND USING SAME
NUMBER OF SEQUENCES: 73
CORRESPONDENCE ADDRESSES:
ADDRESSEE: GENZYME CORPORATION
STREET: One Mountain Road
CITY: Framingham
STATE: Massachusetts
COUNTRY: United States of America
ZIP: 01701
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
OPERATING SYSTEM: IBM PC compatible
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA: US/08/665,259
PATENT APPLICATION NUMBER: US/08/665,259
FILING DATE: 17-JUN-1996
CLASSIFICATION: 435

ATTORNEY/AGENT INFORMATION:
NAME: Dugan, Deborah A.
REGISTRATION NUMBER: 37,315
REFERENCE/DOCKET NUMBER: 105-9.1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (508) 872-8400
TELEFAX: (508) 872-8415
INFORMATION FOR SEQ ID NO: 21:
SEQUENCE CHARACTERISTICS:
LENGTH: 580 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-665-259-21

Query Match 8.94; Score 69.5; DB 3; Length 580;

Best Local Similarity 23.54; Pred. No. 49;
Matches 43; Conservative 9; Mismatches 42; Indels 89; Gaps 11;

Oy 9 RC-----RPINATLAVEKGPVCTVTTTICAGVCTPTNRVLQVLPALPQVNCVRD 62
Db 287 RCKPFYCDRPMQATARESHAACAC-----SCNGHA-----RR 319
Oy 63 VRF--ESIRLPGCPGVNPVSYVALSCQ-----CALCR-----ESTTD---CG 102
Db 320 CRNNELYLGRSG-----CGLNCRHNTAGRHCHYCRGFTYRDPGLASORACR 372
Oy 103 GKQHP-----LTCCO--DPRFQDSSSKAPPSPSPSLRPG 137
Db 373 ACDCHPVGAAGTKCNOTTGQCCKDGVGTGLTCNRCAFGQCSRSRVPACVKT-IPG 428
Oy 138 PSD 140
Db 429 PTE 431

RESULT 193
US-08-762-500-21
Sequence 21; Application US/08762500
Patent No. 81603806
GENERAL INFORMATION:
APPLICANT: Landes, Gregory M.
APPLICANT: Burn, Timothy C.
APPLICANT: Connors, Timothy D.
APPLICANT: Dackowski, William R.
APPLICANT: Van Raay, Terence J.
APPLICANT: Klinger, Katherine W.
TITLE OF INVENTION: NOVEL HUMAN CHROMOSOME 16 GENES,
METHODS OF MAKING AND USING SAME
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESSES:
ADDRESSEE: GENZYME CORPORATION
STREET: One Mountain Road
CITY: Framingham
STATE: Massachusetts
COUNTRY: United States of America
ZIP: 01701
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
OPERATING SYSTEM: IBM PC compatible
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA: US/08/762,500
FILING DATE: 09-DEC-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/665,259
FILING DATE: 17-JUN-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/US96/10469
FILING DATE: 17-JUN-1996
ATTORNEY/AGENT INFORMATION:

NAME: Dugan, Deborah A.
REGISTRATION NUMBER: 37,315
REFERENCE/DOCKET NUMBER: 18,872
TELEPHONE: (508) 872-8400
TELEFAX: (508) 872-8415
INFORMATION FOR SEQ ID NO: 21:
SEQUENCE CHARACTERISTICS:
LENGTH: 580 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-762-500-21

Query Match 8.9% Score 69.5; DB 3; Length 580;
Best Local Similarity 23.5%; Pred. No. 49;
Matches 43; Conservative 9; Mismatches 42; Indels 89; Gaps 11;
QY 9 RC-----RPINATLAVEKGCPCITVNTTICAGYCTMTTRVLQGLPALPQVWCVNRD 62
DB 287 RCKPFTCDRPMQRTAARESHACLAC-----SCNGHA-----RR 319
QY 63 VRP--ESINLPGCPGVNPNVSYAVALSQ-----CALCR-----RSTTD---CC 102
DB 320 CRFNNELTSLGRSG-----GYCLMCRINTAGCHYCHYCEGTFDQGRALSDRRACR 372
QY 103 GKDHPR-----LTCD--DPRFQDSSSSKAPPSLPSPSRUG 137
DB 373 ACDCPVGAGKTCNQTTCQPCCKDGVGLTCNRCAPFQDSRSPVAPCVKTP----IFG 428
QY 138 PSD 140
DB 429 PTE 431

RESULT 194
US-08-709-924-3
Sequence 3, Application US/08709924
Patent No. 5968513
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
NUMBER OF SEQUENCES: 26
CURRENT APPLICATION DATA: US/08/709,924
FILING DATE: 09-SEP-1996
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: Mlsrock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-018
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids

TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-924-3
Query Match 8.9% Score 69; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 42 MTRVLQGLPALPQ 55
DB 1 MTRVLQGLPALPQ 14

RESULT 195
US-08-709-925-3
Sequence 3, Application US/08709925
Patent No. 5997871
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph
APPLICANT: Lunardi-Iskandar, Yanto
TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
NUMBER OF SEQUENCES: 26
CURRENT APPLICATION DATA: US/08/709,925
FILING DATE: 09-SEP-1996
CLASSIFICATION: 512
ATTORNEY/AGENT INFORMATION:
NAME: Mlsrock, S. Leslie
REGISTRATION NUMBER: 18,872
REFERENCE/DOCKET NUMBER: 8769-017
TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-9741/8864
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 14 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-709-925-3

Query Match 8.9% Score 69; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 42 MTRVLQGLPALPQ 55
DB 1 MTRVLQGLPALPQ 14
RESULT 196
US-08-709-948-3
Sequence 3, Application US/08709948
Patent No. 631504
GENERAL INFORMATION:
APPLICANT: Gallo, Robert C.
APPLICANT: Bryant, Joseph

```

; APPLICANT: Lunardi-Ikandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; TITLE OF INVENTION: B1. ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 20
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 424
; ATTORNEY/AGENT INFORMATION:
; NAME: MISTOCK, S. Leslie
; REFERENCE/DOCKET NUMBER: 8,972
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-948-3

Query Match 8.9%; Score 69; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 42 MTRVLQGVLPALPQ 55
Db 1 MTRVLQGVLPALPQ 14

RESULT 197
US-08-749-169A-3
; Sequence 3, Application US/08/749169A
; Patent No. 5846770
; GENERAL INFORMATION:
; APPLICANT: RACIE, Lisa
; APPLICANT: LAVALLIE, Edward
; APPLICANT: DEROBERTIS, Edward
; TITLE OF INVENTION: CHORDIN COMPOSITIONS
; NUMBER OF SEQUENCES: 8
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Genetics Institute, Inc.
; STREET: 87 CambridgePark Drive
; CITY: Cambridge
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 02140
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/749,169A
; FILING DATE: August 4, 1998
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: LAZAR, Steven R.
; REFERENCE/DOCKET NUMBER: 5284-DIV
; TELEPHONE: (617) 498-8260
; TELEFAX: (617) 876-5851
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 954 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-130-032A-3

Query Match 8.9%; Score 69; DB 2; Length 954;
Best Local Similarity 22.0%; Pred. NO. 96;
Matches 37; Conservative 14; Mismatches 69; Indels 48; Gaps 7;

```

```

; REGISTRATION NUMBER: 32,618
; REFERENCE/DOCKET NUMBER: GI 5284
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (617) 498-8260
; TELEFAX: (617) 876-5851
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 954 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-749-169A-3

Query Match 8.9%; Score 69; DB 2; Length 954;
Best Local Similarity 22.0%; Pred. No. 96;
Matches 37; Conservative 14; Mismatches 69; Indels 48; Gaps 7;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPTRVQLQGVLPALPQVNCVT 60
Db 720 PNYDPLCLSLCTCORRTVICDPVVCPE-----PPSCPHPVQAPDQCCPVCPCE---K 765

QY 61 RQVRFESIRLPGCPRG-----VNPVYSVAVALSCQCALCRSTT 99
Db 766 QDVR---DLPLPSRDPCECYFDGDSNRANGTRNHPVPPFGLIKCAVCTCKGTG 821

QY 100 D--CGGPDHDLCTDDP-RQDSSSKAPP-----PSLPSRSLRGP 138
Db 822 EVHCKVQCPRLACQPVNVFTDCKCKCPVGSANPQLGDMQADGP 869

RESULT 198
US-09-130-032A-3
; Sequence 3, Application US/09130032A
; Patent No. 5986056
; GENERAL INFORMATION:
; APPLICANT: Lavalie, Edward
; APPLICANT: Derobertis, Edward
; APPLICANT: Derobertis, Edward
; TITLE OF INVENTION: HUMAN CHORDIN COMPOSITIONS
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Genetics Institute, Inc.
; STREET: 87 CambridgePark Drive
; CITY: Cambridge
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 02140
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/130,032A
; FILING DATE: August 4, 1998
; CLASSIFICATION: 530
; ATTORNEY/AGENT INFORMATION:
; NAME: LAZAR, Steven R.
; REFERENCE/DOCKET NUMBER: 5284-DIV
; TELEPHONE: (617) 498-8260
; TELEFAX: (617) 876-5851
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 954 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-130-032A-3

Query Match 8.9%; Score 69; DB 2; Length 954;
Best Local Similarity 22.0%; Pred. NO. 96;

```

Fri Oct 11 17:40:47 2002

us-09-813-398-3.default.ra1

Page

Matches 37: Conservative 14; Mismatches 69; Indels 48; Gaps 7;
QY 1 PSEKPLRCPINATLAVEKGCPCWITVTTCAGYCTPTNTRVLQVLPALPOVVCNY 60
Db 720 PNTDPLSLCTCTQRTVICDPVCP-----PPSCRPVQAPQCCPCVCP-----K 765
QY 61 RDVRFESIRLPCPRG-----VNPVSYAVALSOCALCRSTT 99
Db 766 QDVR-----DLPGLRPRGPGCCYFDDGRSMRAAGTRHVPVPPFGLKCAVCTCKGCTG 821
QY 100 D--CGGKDBRLTCDDP--RFQSSSSKAPP-----PSLPSRLPQP 138
Db 822 EVRCKVQCPRLACQPVNVPTDCCQCPVGSANPOLQDPQNDGP 869

RESULT 199
US-08-937-236-3
; Sequence 3, Application US/08937236
; Patent No. 6187310
; GENERAL INFORMATION:
; APPLICANT: MANN, BARBARA J.
; APPLICANT: PETRI, WILLIAM A.
; APPLICANT: DODSON, JAMES W.
; TITLE OF INVENTION: RECOMBINANT ENTAMOEBA HISTOLYTICA LECTIN
; TITLE OF INVENTION: SUBUNIT PEPTIDES AND REAGENTS SPECIFIC FOR MEMBERS OF THE
; TITLE OF INVENTION: 170 KD SUBUNIT MULTIGENE FAMILY
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 PENNSYLVANIA AVENUE N.W., STE. 5500
; CITY: WASHINGTON
; STATE: DC
; COUNTRY: USA
; ZIP: 200006-1812
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/937,236
; FILING DATE:
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/569,214
; FILING DATE: 16 SEPTEMBER 1997
; ATTORNEY/AGENT INFORMATION:
; NAME: LIVNAT, SHMUEL
; REGISTRATION NUMBER: 33,949
; REFERENCE/DOCKET NUMBER: 291482000622
; TELEPHONE: (202) 887-1500
; TELEFAX: (202) 887-0763
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1276 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear

Query Match 8.9%; Score 69; DB 4; Length 1276;
Best Local Similarity 20.2%; Pred. No. 1.3e+02;
Matches 33; Conservative 23; Mismatches 63; Indels 44; Gaps 6;
QY 8 PRCRPNATLAVEKGCPCV-----CITV-----NTTICAGY-----38
Db 621 PCKVSNCTDLVRDGLIKRNETSKTYTWENVDSCNTKIEFAKDDKSETMCKQYSTT 680
QY 39 CPTMTVLQGLVLPALPOVVCNYRDVRFESIRLPCPRGVNVPVSYAVALSOCALCRST 98
Db 681 CLNGKCYQAV--GDVSNVCCY-----CSMGTDNIIITHDDCNRSKSGCNFN 727

QY 99 TDCGGKDBRLTCDDPFRQSSSSKAPPSPSLPSRLPQPSDT 141
Db 728 GNCIKGSDNSYSCVFEK--DKTSSKSDNDICAECSLUTCPADT 768
RESULT 200
US-08-569-214-3
; Sequence 3, Application US/08569214
; Patent No. 6165469
; GENERAL INFORMATION:
; APPLICANT: MANN, BARBARA J.
; APPLICANT: PETRI, WILLIAM A.
; TITLE OF INVENTION: RECOMBINANT ENTAMOEBA HISTOLYTICA LECTIN
; TITLE OF INVENTION: SUBUNIT PEPTIDES AND REAGENTS SPECIFIC FOR MEMBERS OF THE
; TITLE OF INVENTION: 170 KD SUBUNIT MULTIGENE FAMILY
; NUMBER OF SEQUENCES: 10
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 2000 PENNSYLVANIA AVENUE N.W., STE. 5500
; CITY: WASHINGTON
; STATE: DC
; COUNTRY: USA
; ZIP: 200006-1812
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/569,214
; FILING DATE:
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/US94/06890
; FILING DATE: 17-JUN-1994
; ATTORNEY/AGENT INFORMATION:
; NAME: MURASHIGE, KATE H.
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 9148-0006.21
; TELEPHONE: (202) 887-1500
; TELEFAX: (202) 887-0763
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1291 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear

Query Match 8.9%; Score 69; DB 4; Length 1291;
Best Local Similarity 20.2%; Pred. No. 1.4e+02;
Matches 33; Conservative 23; Mismatches 63; Indels 44; Gaps 6;
QY 8 PRCRPNATLAVEKGCPCV-----CITV-----NTTICAGY-----38
Db 636 PCKVSNCTDLVRDGLIKRNETSKTYTWENVDSCNTKIEFAKDDKSETMCKQYSTT 695
QY 39 CPTMTVLQGLVLPALPOVVCNYRDVRFESIRLPCPRGVNVPVSYAVALSOCALCRST 98
Db 696 CLNGKCYQAV--GDVSNVCCY-----CSMGTDNIIITHDDCNRSKSGCNFN 742
QY 99 TDCGGKDBRLTCDDPFRQSSSSKAPPSPSLPSRLPQPSDT 141
Db 743 GNCIKGSDNSYSCVFEK--DKTSSKSDNDICAECSLUTCPADT 783

Search completed: October 11, 2002, 17:58:12
Job time : 24 secs